ROBERTS GORDON®

NRG Control

Energy Saving Control for ROBERTS GORDON® Infrared and Warm Air Heating Equipment

Installation, Operation and Service Manual

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can result in death, injury or property damage. Read the Installation, Operation and Service Manual thoroughly before installing or servicing this equipment.

Installation must be done by an electrician qualified in the installation and service of control systems for heating equipment.

CE

Installer

Please take the time to read and understand these instructions prior to any installation. Installer must give a copy of this manual to the owner.

Owner

Keep this manual in a safe place in order to provide your serviceman with necessary information.

Roberts-Gordon Europe Limited
Unit A, Kings Hill Business Park
Darlaston Road, Wednesbury
West Midlands, WS10 7SH UK
Telephone: +44 (0)121 506 7700
Fax: +44 (0)121 506 7701
Service Telephone: +44 (0)121 506 7709
Service Fax: +44 (0)121 506 7702
E-mail: uksales@rg-inc.com
E-mail: export@rg-inc.com
www.rg-inc.com
www.combat.co.uk
www.blackheatheaters.co.uk

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Product Approval

ROBERTS GORDON® appliances have been tested and CE certified as complying with the essential requirements of the Gas Appliance Directive, the Low Voltage Directive, the Electromagnetic Compatibility Directive and the Machinery Directive for use on natural gas, LPG and fuel oil when installed, commissioned and maintained in accordance with these instructions.

These instructions refer to appliances designed to operate in the European Union.

Appliances designed for other countries (non European Union) are available on request.

This appliance must be installed in accordance with the local and national codes in force and used only in a sufficiently ventilated space, as specified in these instructions.

Before installation, check that the local gas distribution systems, nature of gas and pressure, and adjustment of the appliance are compatible.

SECTION 1: INTRODUCTION

Your Safety is Important to Us! This symbol is used throughout the manual to notify you of possible fire, electrical or burn hazards. Please pay special attention when reading and following the warnings in these sections.

Installation, service and annual inspection of controller must be done by an electrician qualified in the installation and service of control systems for heating equipment.
Installation, service and annual inspection of heater must be done by a contractor qualified in the installation and service of gas or oil fired heating equipment.
Read this manual carefully before installation, operation, or service of this equipment.
The appliance must be applied and operated under the general concepts of resonable use and installed using best building practices.
This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
For optimum heater performance and safe heating conditions, inspect and maintain heater(s) before every heating season and as necessary. Also, know and maintain heater clearances to combustibles, see heater Installation, Operation and Service Manual for further details. If you require additional manuals, contact Roberts-Gordon at +44 (0)121 506 7700 or at www.rg-inc.com.

1.1 Safety Labels and Their Placement

Product safety signs or labels should be replaced by the product user when they are no longer legible. Please contact Roberts-Gordon LLC or your ROBERTS GORDON® independent distributor to obtain replacement signs or labels.

1.2 What is a ROBERTS GORDON® NRG Control?

The ROBERTS GORDON® NRG Control is a micro processor based controller designed for efficient control of ROBERTS GORDON® warm air and radiant products. Each control is intended for the operation of a single zone of heating but is designed so that individual controls may be linked to form a network that will allow information and settings to be available at one or any of the units dependant upon site configuration. The controls will operate the following products:

- Warm air heaters On/Off operation
- Unitary BLACKHEAT® radiant systems
- BLACKHEAT® multi burner systems on a single zone*
- CORAYVAC® systems on a single zone*
- Heaters with two stage High/Low operation
- Heaters with modulating burners requiring a 0-10V DC input

**For safe use of multiburner and CORAYVAC®systems with up to four zones operating with a single shared fan, the additional use of the ROBERTS GORDON® System Control will be required with a ROBERTS GORDON® NRG Control installed for each zone.*

1.2.1 Features of the ROBERTS GORDON® NRG Control.

- Coded access to set up and network functions to prevent unauthorised access.
- Built in temperature sensor.
- Remote temperature sensor option.
- Self learning optimum start.
- Automatic correction for daylight saving time changes.
- Burner lockout indication and reset for suitable heater systems.
- Pre programmed holiday functions.
- May be connected on a network to give access to all controls from a single point.
- Programmed in 5 languages as standard.
- Data logging of hours run and temperatures.

1.3 General Requirements

The ROBERTS GORDON® NRG Control is only for use with ROBERTS GORDON® heating products. On site commissioning is required to ensure that the temperature sensor is calibrated, and that the options available are selected correctly. Before proceeding with installation, it will be necessary to check that the following points have been considered.

1.4 Control Location

Each control is intended to operate a single zone of heating. The built in sensor may be used for temperature control. In this case, position the control as in *Section 1.6.1 through Section 1.6.3*.
When remote temperature sensors are required, the control may be fitted in any suitable location. If required, two remote sensors may be installed. The average of the two sensors will be calculated by the control.

1.5 Network Installation

The ROBERTS GORDON® NRG Control may be installed on a network so that all controls may be accessed from a single control, selected controls or all controls dependant upon how they are configured on site. To use the control on a network simply requires the wiring of the COMS port on one control to connect to the COMS port on each of the other controls in a continuous loop.
It will then be possible to set program times and temperatures for all controls from one location and copy programs from one control to another.
It will also be possible to read the current status of all controls from a single station.

1.6 Installation Requirements

1.6.1 Radiant Tube Heaters

The ROBERTS GORDON® NRG Control can operate up to ten burners providing that the electrical load on each relay does not exceed 7 A inductive.
Mount the ROBERTS GORDON® NRG Control (or remote sensor if fitted) on a wall or column at a height of approximately 1.5 to 1.8 metres from the floor.
The ROBERTS GORDON® NRG Control, or sensor, should be in a position to monitor an average radiant temperature. Keep clear of cold draughts, direct sunlight, direct radiant field heaters and areas of little air movement such as corners. For larger systems, use two remote sensors to provide closer temperature control.

1.6.2 Warm Air Heaters

The ROBERTS GORDON® NRG Control can operate a single warm air heater. However up to four heaters may be controlled from each control if each heater is provided with interface relays *See Page 12, Section 4.5*.
Mount the ROBERTS GORDON® NRG Control, or remote sensor, on a wall or column at a height of approximately 1.5 to 1.8 metres from the floor. The ROBERTS GORDON® NRG Control, or sensor, should be positioned where it will monitor an average room temperature. Keep clear of cold draughts, direct sunlight, path of warm air from the heater and areas of little air movement such as corners.

1.6.3 Multiple Unit Considerations

When using the control to operate more than one radiant or warm air heater, careful consideration should be given to the position of the control or remote temperature sensor because the single temperature monitoring point controls all of the heaters that are connected. The use of two remote sensors may provide closer temperature control.
For warm air heaters, the interface relay D 258 must be installed, in accordance with *Page 12, Section 4.5*, adjacent to each heater to ensure that the electrical supply at each heater is isolated for maintenance.
For larger air heaters, it may not be practical to operate more than one heater from a single control due the larger area covered by these heaters.

Contact Roberts-Gordon Europe Limited for further advice on control location and application.

1.6.4 Installation Materials

Shielded cable Belden 8451, General Cable C 2514, or equivalent rated for up to 300 V must be used for sensors, modulating 0-10 V output, 12 V DC inputs and network bus connections. Maximum cable length for each sensor is 100 m. Maximum cable length for network is 1,000 m. **Keep control cables away from high current mains circuits to prevent signal interference.**

1.6.5 Electrical Requirements

⚠ DANGER

Electrical Shock Hazard

Disconnect electric before service.

Controller must be properly grounded to an electrical source.

Failure to follow these instructions can result in death or electrical shock.

The controller must have a 230 V 50 Hz power supply wired with the Ferrite EMC filter *See Page 7, Section 7* in accordance with the relevant wiring diagram from *Page 9, Section 4*.

1.7 Programming Details

Every control is programmed with default settings and may be reconfigured to suit the needs of the installation. *See Page 30, Section 5.6.3 and Page 31, Table 1*.

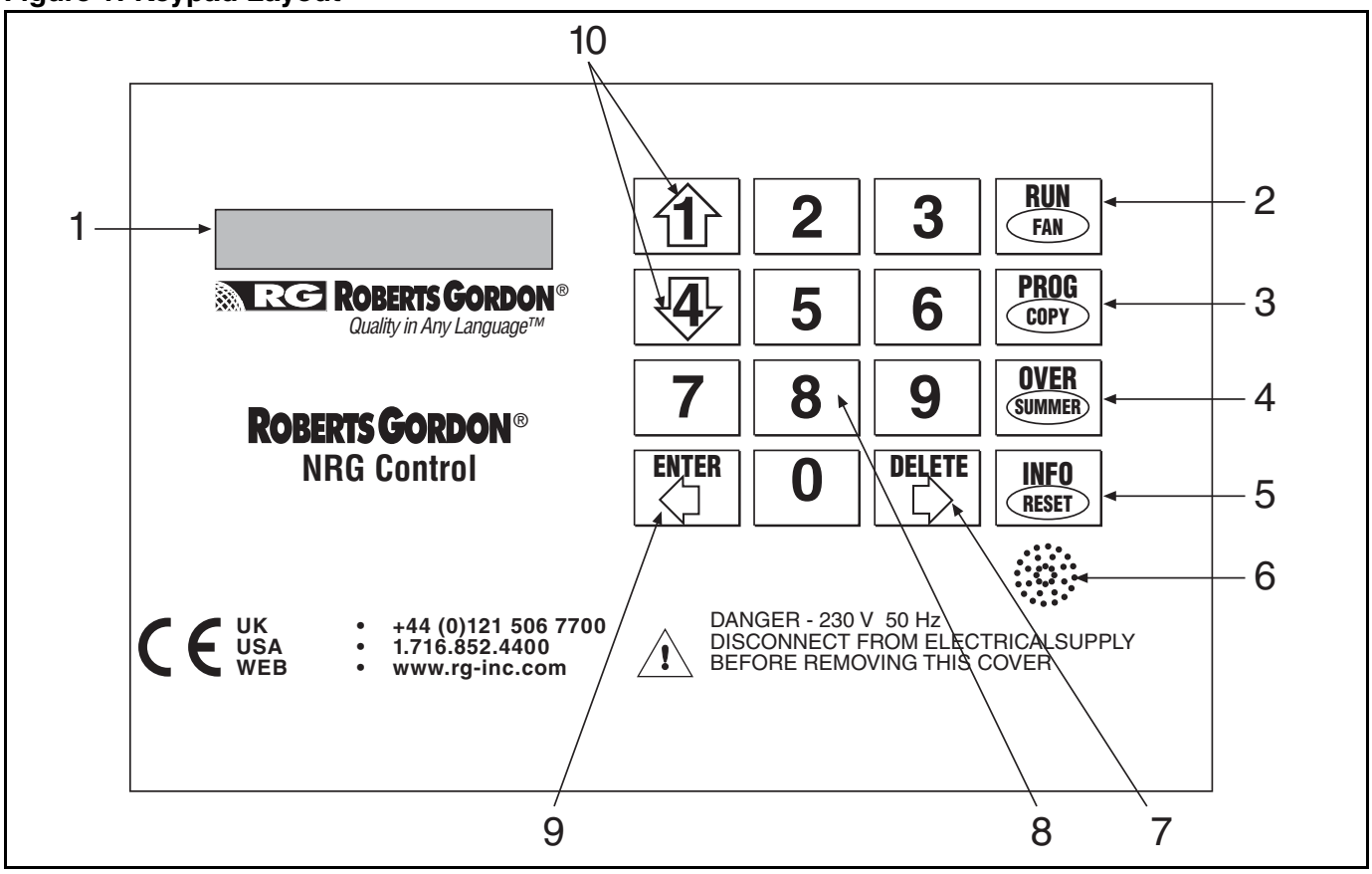
When supplied each ROBERTS GORDON® NRG Control is configured as a stand alone unit.

Each unit must be configured to operate the heating equipment it is controlling. *See Page 30, Section 5.6.3 and Page 31, Table 1*.

The programming for stand alone units and network units is similar. However, for network units, they must be network configured first. *See Page 28, Section 5.6.1*.

SECTION 2: SPECIFICATIONS

Figure 1: Keypad Layout



2.1 Material Specifications

2.1.1 Enclosure

Enclosure Material:	ABS fire retardant
Weight:	1.6 kg
Dimensions:	158 mm x 62 mm x 220 mm

2.1.2 Electrical

Supply:	230 V ± 10% 50 Hz 1 Ø
Outputs:	3 single pole normally open Rated at 10 A resistive or 7 A inductive.
Battery Back Up:	3 Months.
Built in Fuses	
Main Fuse:	FS1 800 mA anti-surge
PCB Protection	FS2 315 mA quick blow
12 V Output	FS3 315 mA quick blow

2.1.3 Sensors

Sensor:	Built in as standard Remote available as option
Remote Sensor:	
Warm Air & Radiant	80 mm x 80 mm x 22 mm
Black Bulb Radiant	68 mm diameter x 50 mm
Sports Hall Sensor	Flush Mounting

2.1.4 Program Features

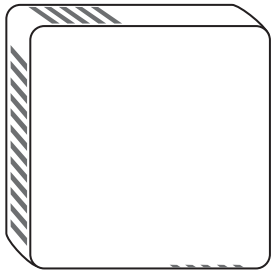
Zones:	One
Programs:	3 timed periods per day, 7 days per week.
Optimum Start:	Selectable
Night Set Back:	Selectable
Burner Modulation:	Selectable (0-10 V DC output. 0 V=low fire)
Two Stage Burner	Selectable
Burner Lockout:	
Indication & Reset:	Available for use with suitable heater types
Pressure Switch	Connections for fan proving for CORAYVAC® systems
Network	Up to 32 units may be connected together on a network using Belden 8451 shielded cable

2.2 Keypad Layout

1. LCD Readout
2. Run button and fan button, returns to standard screen from programming options, manual operation of fan on warm air heaters.
3. Program button and copy button used to enter program options areas and copy time program.
4. Override button and summer button, used to allow operating time to be extended and set control in summer mode.
5. Information button and reset button shows current setting and status plus burner lockout reset.
6. Built in temperature sensor.
7. Delete button cancels input during programming (move forward around network).
8. Numerical key pad for inputting information.

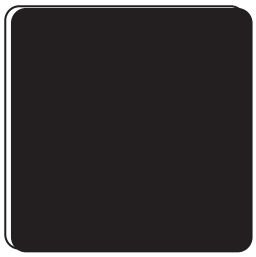
9. Enter key to confirm inputs (move backward around network).
10. Temperature adjustment (optional, between engineer defined limits) reverts to programmed set point at next switch on.

Figure 2: Remote Sensors



Temperature Sensor
(Wire On Site)

Black Bulb Sensor

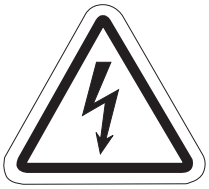


Sports Hall Sensor

Description	Part Number
Temperature Sensor (Warm Air & Radiant)	D247
Black Bulb Sensor (Radiant)	D269
Sports Hall Sensor	D270

SECTION 3: INSTALLATION

⚠ DANGER



Electrical Shock Hazard

Disconnect electric before service.

Controller must be properly grounded to an electrical source.

Failure to follow these instructions can result in death or electrical shock.

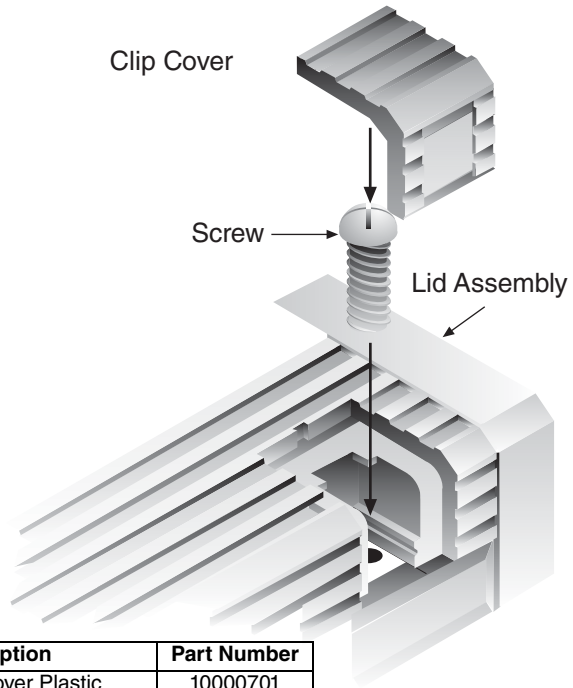
Installation of the ROBERTS GORDON® NRG Control must be done by an electrician qualified in the installation of control systems for heating equipment.

3.1 Installing the ROBERTS GORDON® NRG Control

Choose a mounting location for the control. *See Page 2, Section 1.4* and *Section 1.6*.

3.1.1 Remove the cover of the controller by removing the four clips and screws. *See Figure 3* for cover detail.

Figure 3: Cover Detail

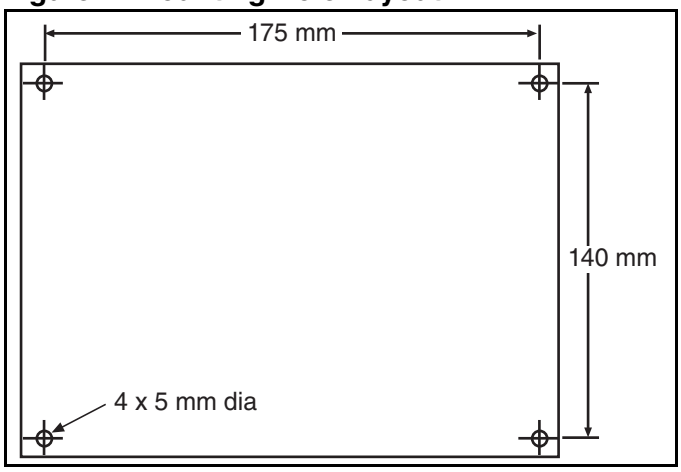


Description	Part Number
Clip Cover Plastic	10000701
Screw	10000700
Lid Assembly	10010500

3.1.2 Disconnect the ribbon cable from the control PCB board.

3.1.3 Position the controller. *Figure 4* shows the mounting hole locations.

Figure 4: Mounting Hole Layout

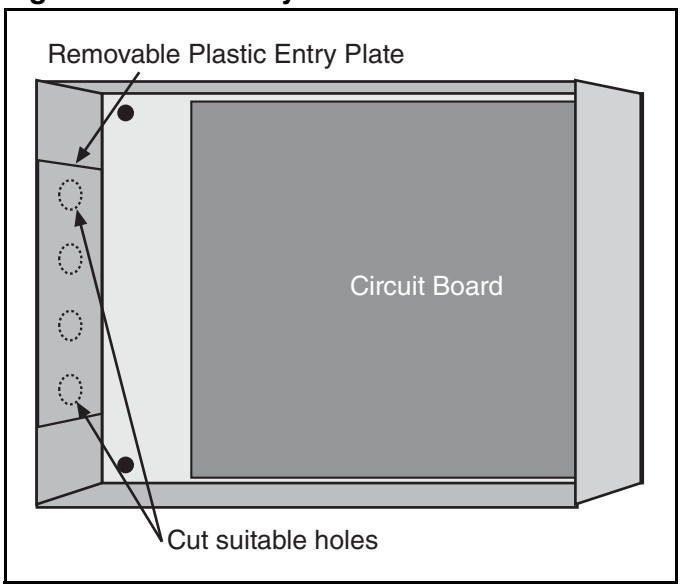


3.1.4 Remove the plastic cable entry plate and carefully cut suitable holes as required for the conduit entry to the control. *See Figure 5*.

Do not use other entry routes or pass site wiring over the circuit board.

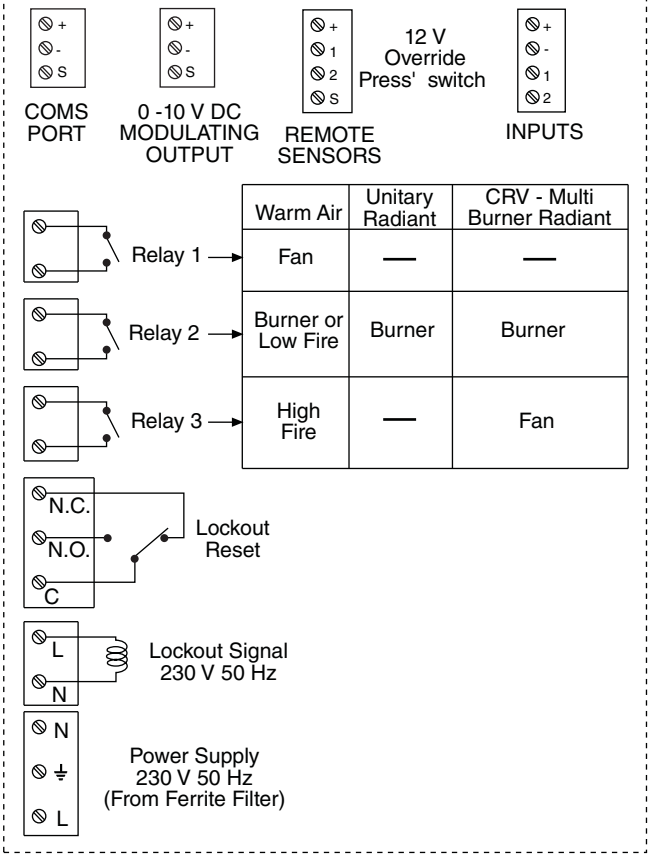
3.1.5 Refit the cable entry plate into the slot at the side of the panel.

Figure 5: Cable Entry



3.1.6 Install electrical wiring in accordance with the correct wiring diagram in *Section 4* to the wiring terminals as shown in *Figure 6*.

Figure 6: Control Terminals and Relay Use



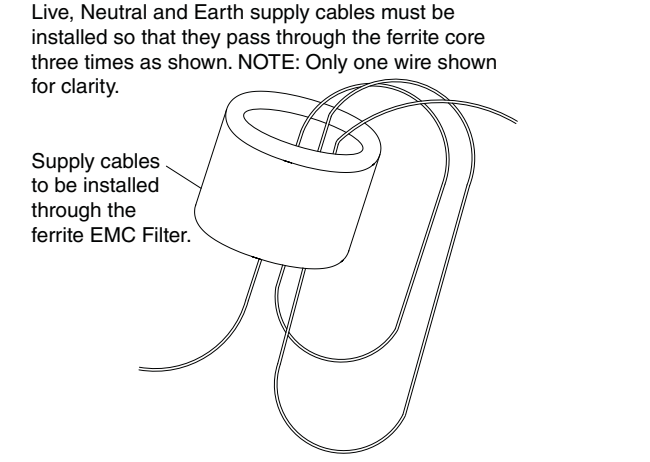
3.1.7 Reconnect the ribbon cable to the PCB board and replace the cover of the control by replacing the 4 screws and covers as removed *on Page 6, Section 3.1.1*.

3.2 Electrical Installation Requirements

3.2.1 The panel must have a 230 V 50 Hz supply in accordance with the appropriate wiring diagram from *Section 4*.

3.2.2 Ensure that the Live, Neutral and Earth cables are looped three times through the ferrite EMC filter as shown.

Figure 7: Ferrite EMC Filter


Live, Neutral and Earth supply cables must be installed so that they pass through the ferrite core three times as shown. NOTE: Only one wire shown for clarity.
Supply cables to be installed through the ferrite EMC Filter.

3.2.3 Ensure that the cables to any low voltage equipment are Belden 8451 shielded cables with the shield connected as shown in the wiring diagrams *on Page 9, Section 4.1 through Page 10, Section 4.2*.

3.2.4 Lockout Reset

Facilities are available for systems that reset to Live or reset to Neutral. Look at the wiring diagram on each heater to determine the correct system to use for the heater concerned.
Failure to comply will cause permanent damage to the burner control on the appliance and the ROBERTS GORDON® NRG Control.

3.2.5 Network Connections

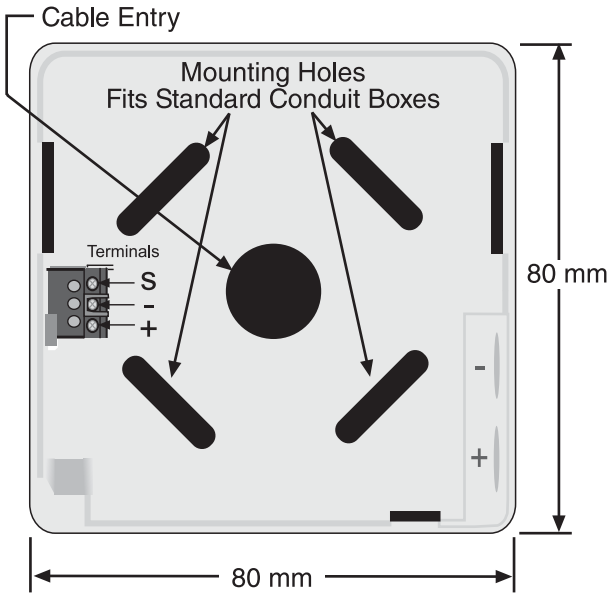
Optionally the controls may linked together as described *on Page 2, Section 1.5*. The site wiring is to be connected and the DIP switches set as shown *on Page 9, Section 4.1*.

3.2.6 Remote Sensors

All sensors are electrically connected in the same way. The use of remote sensors is optional.
One remote temperature sensor will operate the control. For larger heated areas, two remote temperature sensors may be installed where the control will automatically calculate the average of the two readings. *See Figure 8 and Figure 9*.

Position the remote sensor/s in accordance with *Page 2, Section 1.4 and Page 3, Section 1.6*. *See Page 5, Figure 2* for sensor detail.

Figure 8: Sensor Mounting Plate - Warm Air



Remote sensors must be fastened using countersunk screws. Dome headed screws will short out the board and result in failure of the sensor.

Figure 9: Remote Temperature Sensor - Radiant

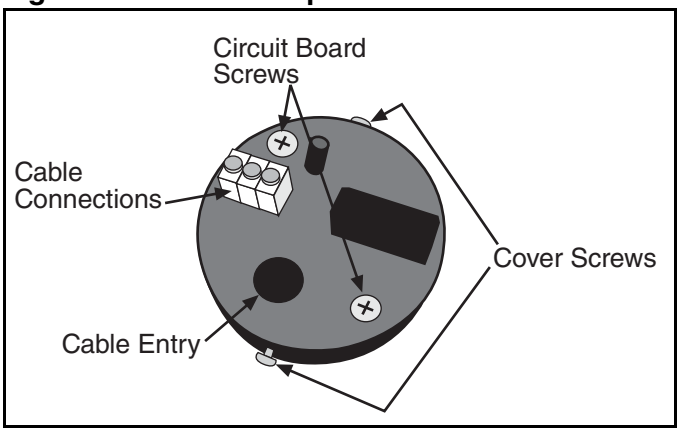
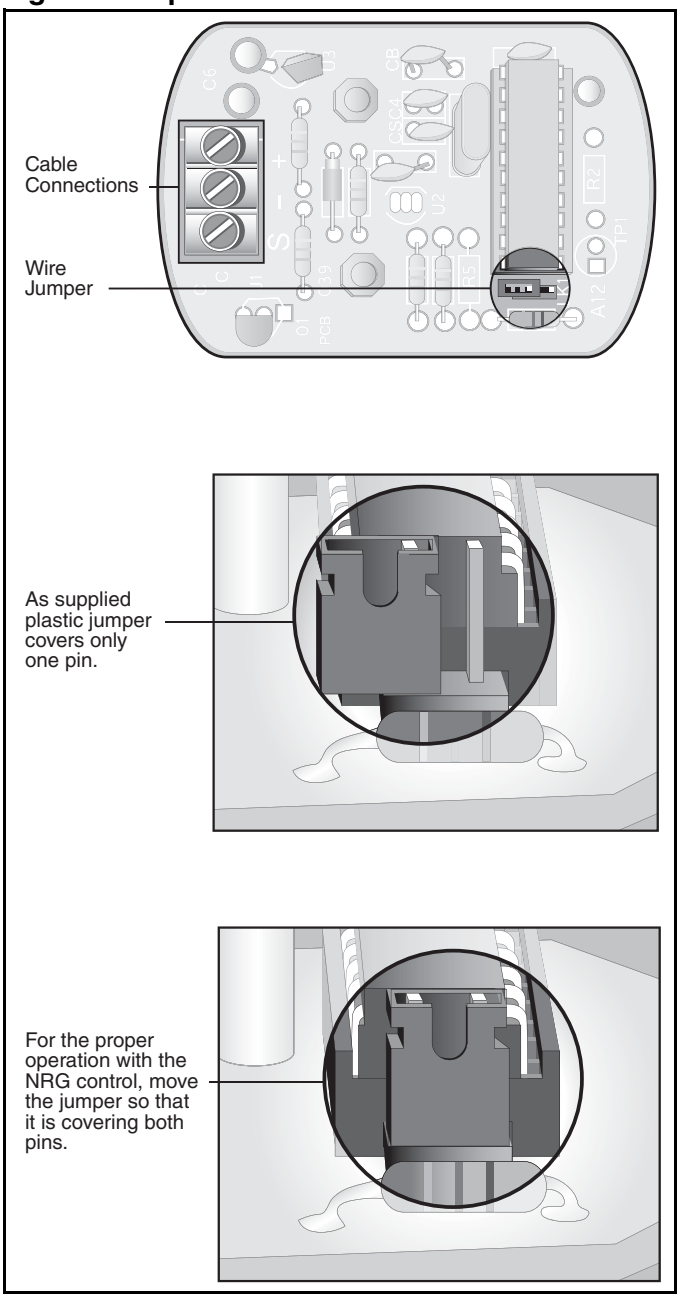


Figure 10: Sports Hall Sensor

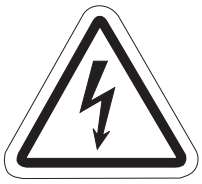

Cable Connections
Wire Jumper
As supplied plastic jumper covers only one pin.
For the proper operation with the NRG control, move the jumper so that it is covering both pins.

3.2.7 Pressure Switch

For CORAYVAC® systems only, a pressure switch is required to prove the operation of the system fan. This must be connected to the input terminals as shown *on Page 10, Section 4.2 and Page 15, Section 4.10* to allow the control to monitor the correct operation of the fan. The control must also be configured to monitor the pressure switch. *See Page 30, Section 5.6.3 and Page 31, Table 1*.

SECTION 4: WIRING

⚠ DANGER



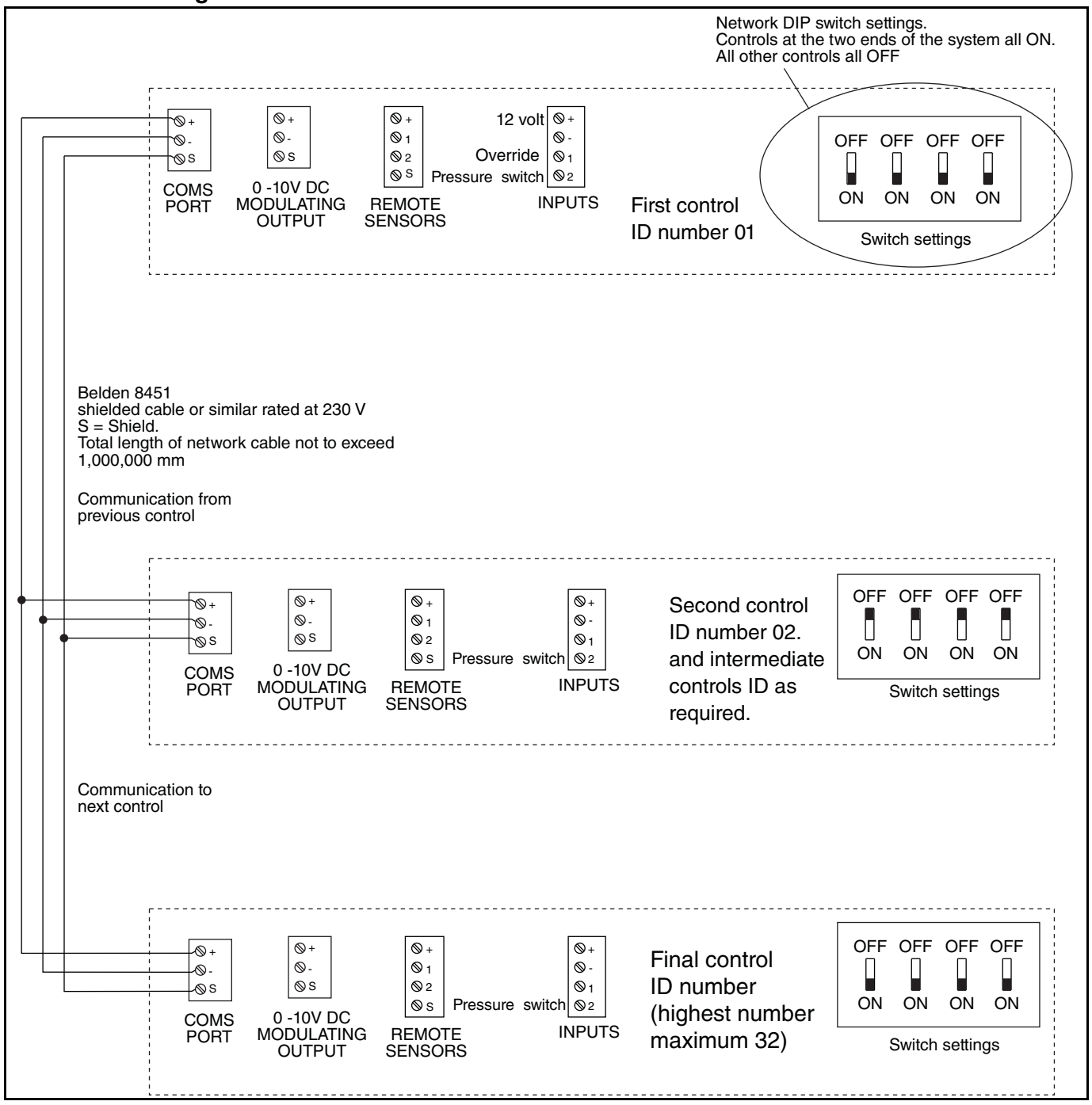
Electrical Shock Hazard

Disconnect electric before service.

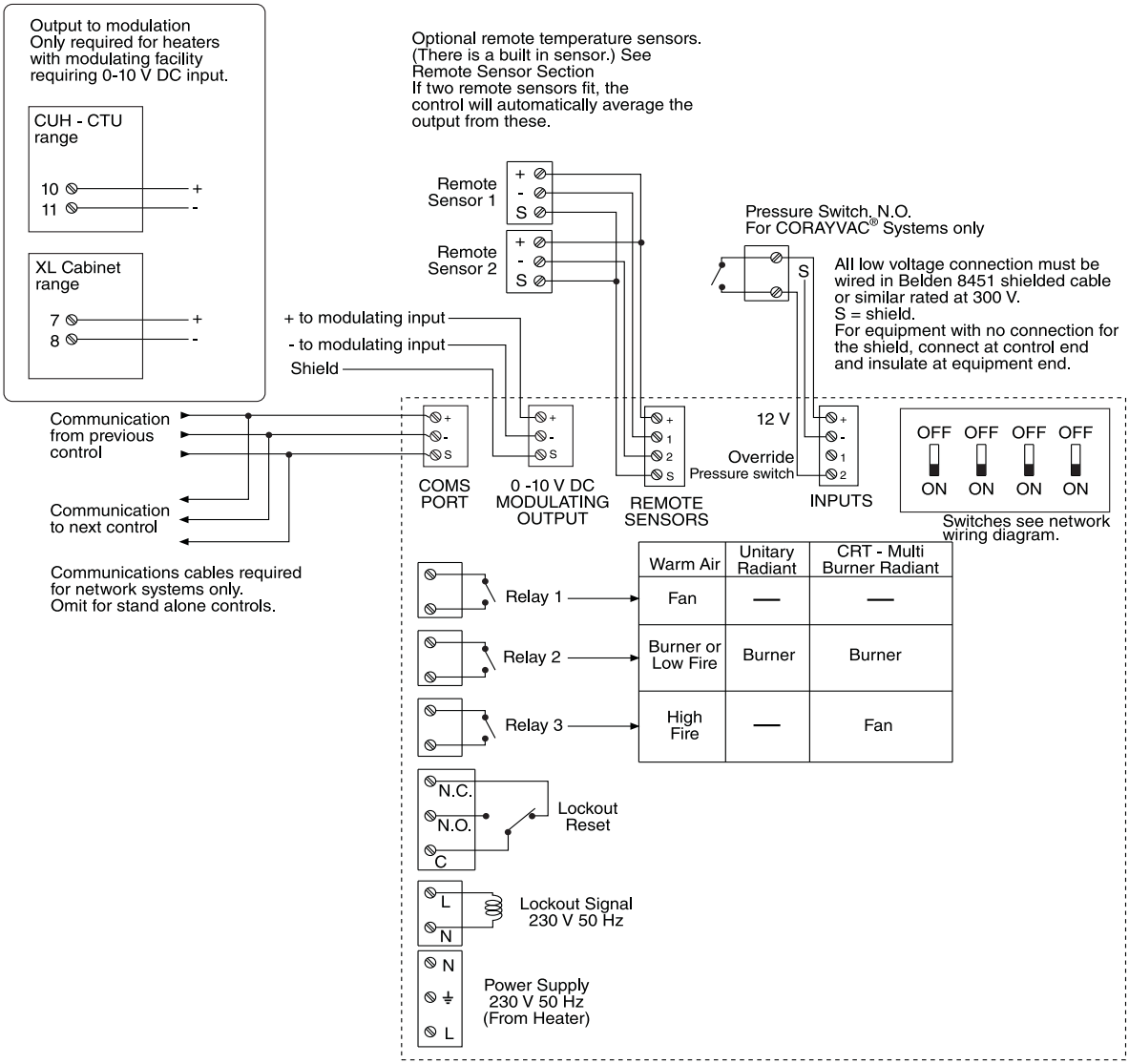
More than one disconnect switch may be required to disconnect electric to the unit.

Failure to follow these instructions can result in death or electrical shock.

4.1 Network Wiring


Network DIP switch settings.
Controls at the two ends of the system all ON.
All other controls all OFF
COMS PORT
0 -10V DC MODULATING OUTPUT
REMOTE SENSORS
12 volt
Override
Pressure switch
INPUTS
First control ID number 01
OFF OFF OFF OFF
ON ON ON ON
Switch settings
Belden 8451
shielded cable or similar rated at 230 V
S = Shield.
Total length of network cable not to exceed 1,000,000 mm
Communication from previous control
Second control ID number 02. and intermediate controls ID as required.
Communication to next control
Final control ID number (highest number maximum 32)

4.2 Low Voltage Wiring

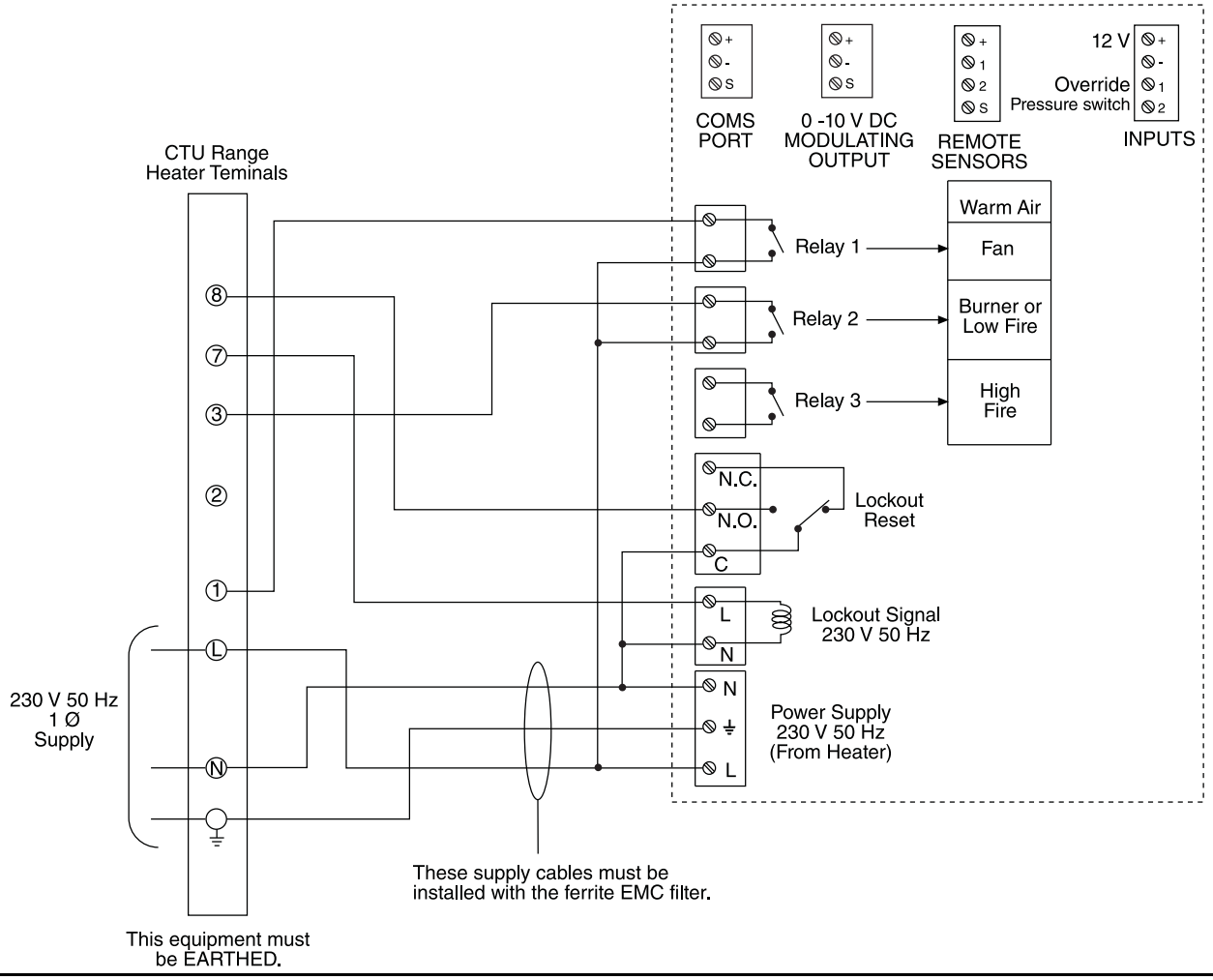


Remote Time Enabling from BMS

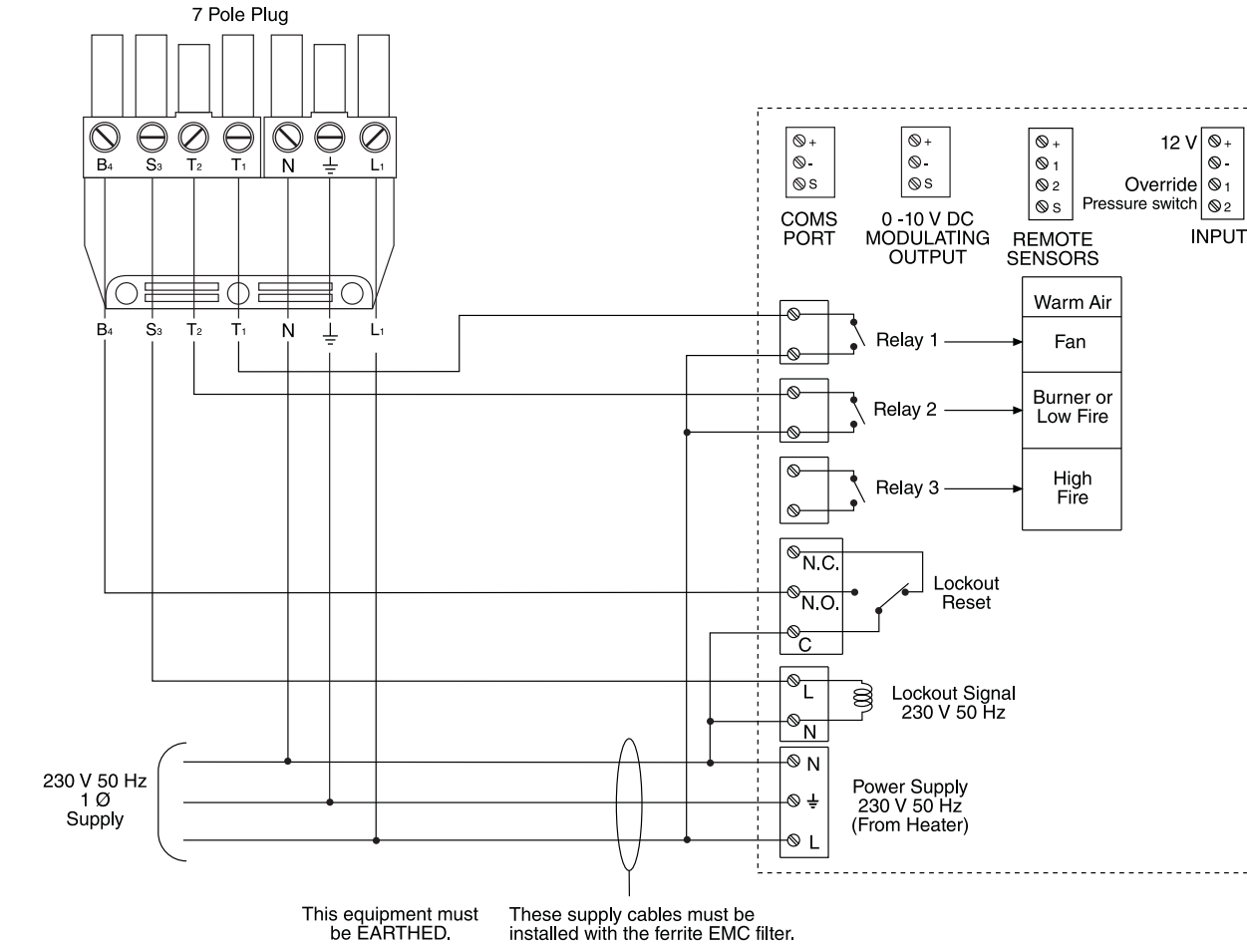
NOTE: This is achieved by using a volt free contact on the BMS which on heat demand bridges across + & 1 on the NRG INPUT terminals. All programme ON/OFF times on the NRG must be set to 00 00. When the BMS is calling for heat the display shows REMOTE OVERRIDE and does not indicate if Heat is ON or OFF. The Information Screen shows Time Clock DAY. When the BMS is not calling for heat the display shows HEAT OFF and the Information Screen shows Time Clock NIGHT.

Temperature control remains with the NRG.

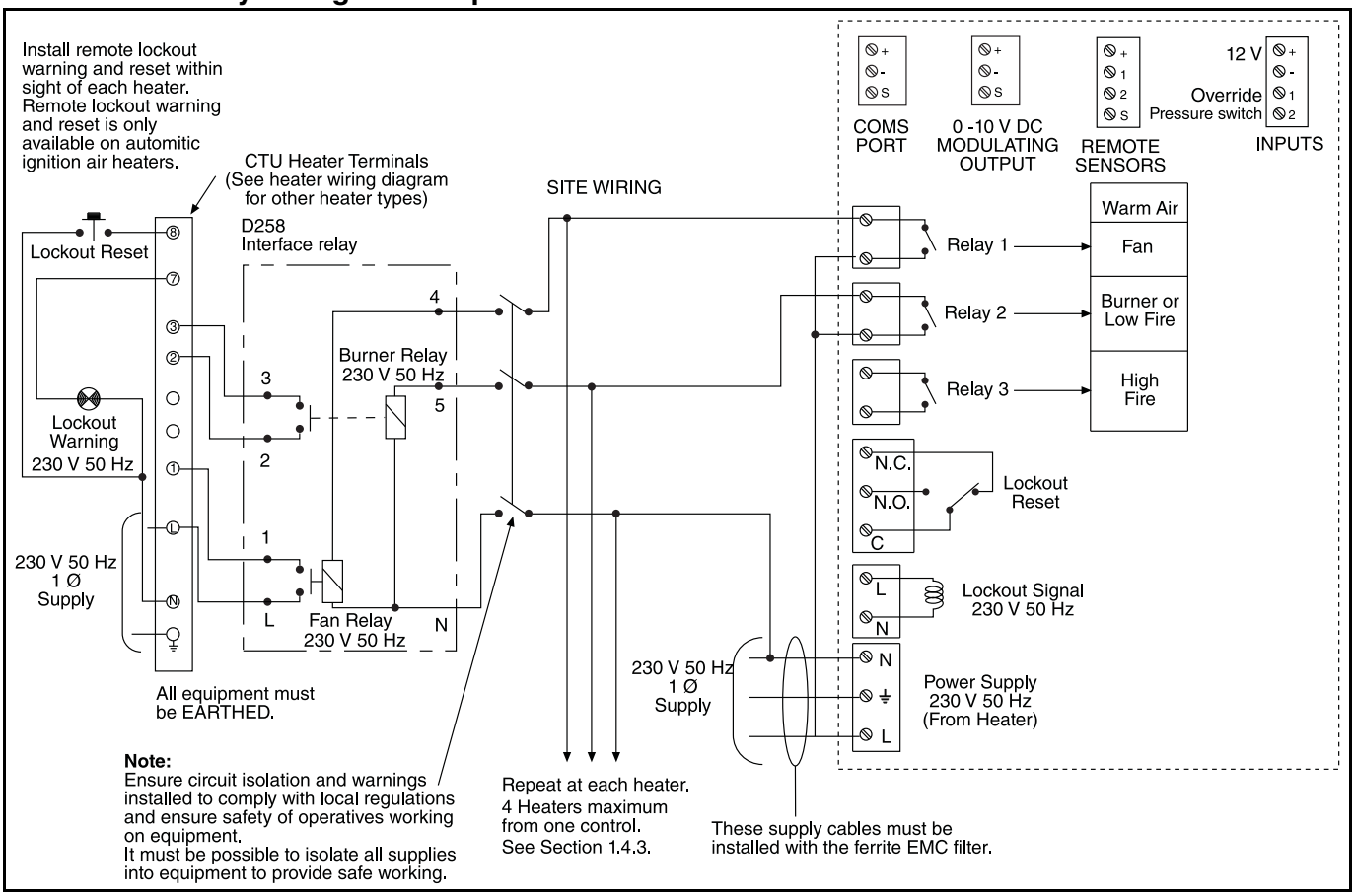
4.3 CTU Wiring



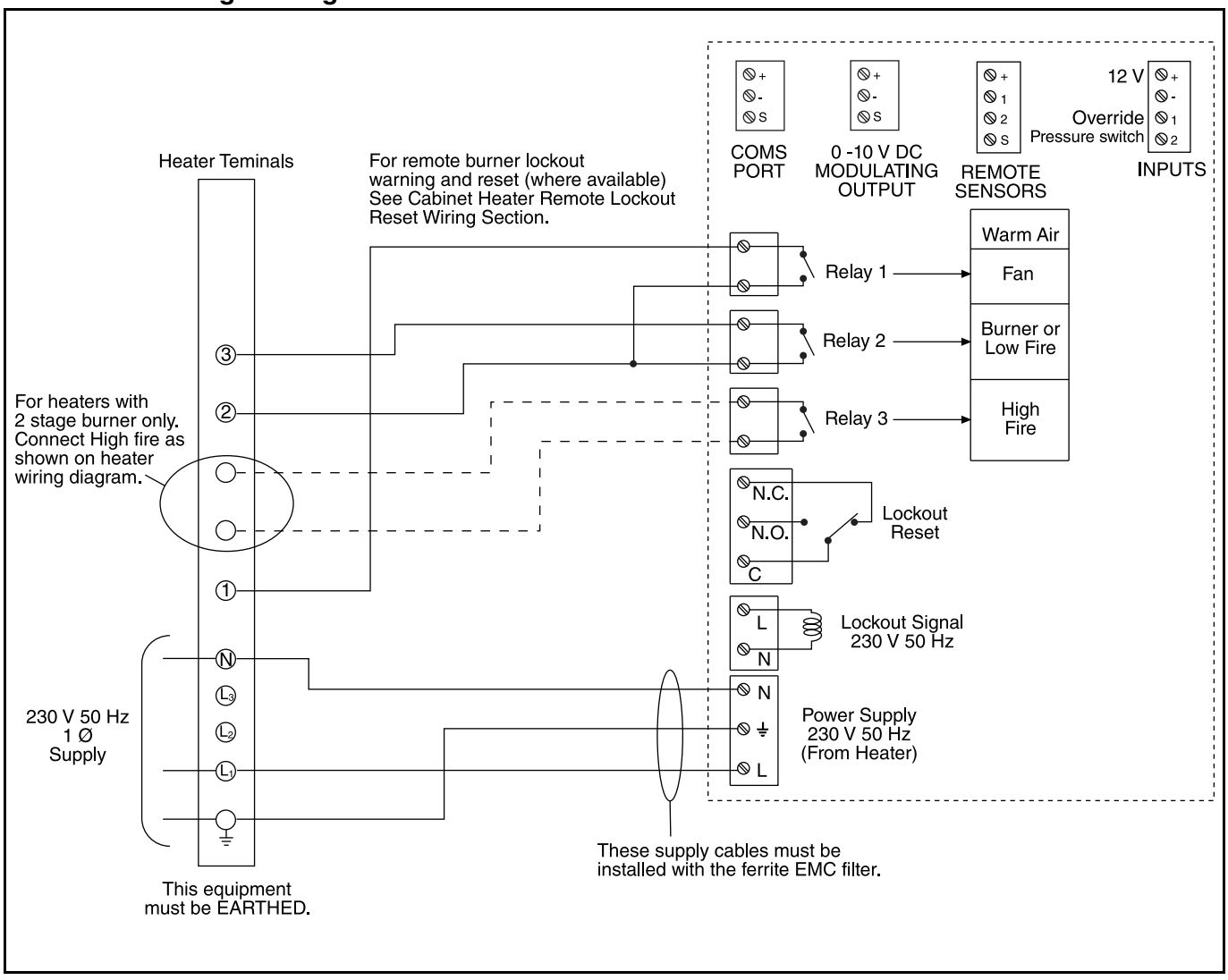
4.4 CTCU Wiring



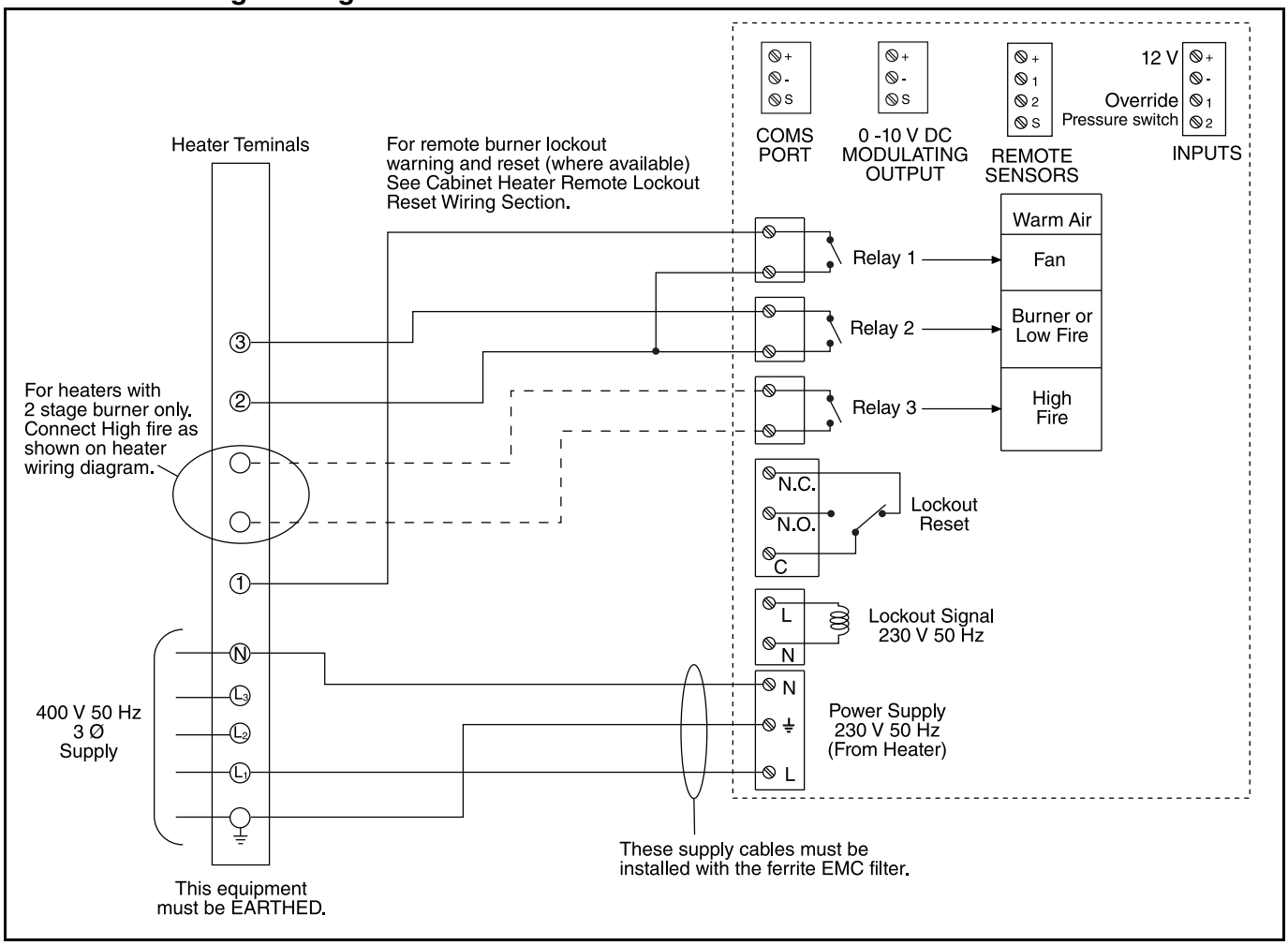
4.5 Interface Relay Wiring for Multiple Warm Air Heaters


Install remote lockout warning and reset within sight of each heater. Remote lockout warning and reset is only available on automitic ignition air heaters.
CTU Heater Terminals (See heater wiring diagram for other heater types)
D258 Interface relay
SITE WIRING
COMS PORT
0 -10 V DC MODULATING OUTPUT
REMOTE SENSORS
12 V
Override
Pressure switch
INPUTS
Lockout Reset
Lockout Warning 230 V 50 Hz
Burner Relay 230 V 50 Hz
Fan Relay 230 V 50 Hz
230 V 50 Hz 1 Ø Supply
All equipment must be EARTHED.
Relay 1
Relay 2
Relay 3
Warm Air
Fan
Burner or Low Fire
High Fire
N.C.
N.O.
C
Lockout Reset
Lockout Signal 230 V 50 Hz
Power Supply 230 V 50 Hz (From Heater)
Note:
Ensure circuit isolation and warnings installed to comply with local regulations and ensure safety of operatives working on equipment.
It must be possible to isolate all supplies into equipment to provide safe working.
Repeat at each heater.
4 Heaters maximum from one control.
See Section 1.4.3.
These supply cables must be installed with the ferrite EMC filter.

4.6 PGP/POP Range Wiring - 1 Ø Cabinet Heaters


Heater Teminals
For remote burner lockout warning and reset (where available) See Cabinet Heater Remote Lockout Reset Wiring Section.
COMS PORT
0 -10 V DC MODULATING OUTPUT
REMOTE SENSORS
12 V
Override
Pressure switch
INPUTS
For heaters with 2 stage burner only. Connect High fire as shown on heater wiring diagram.
230 V 50 Hz 1 Ø Supply
Relay 1
Relay 2
Relay 3
Warm Air
Fan
Burner or Low Fire
High Fire
N.C.
N.O.
C
Lockout Reset
Lockout Signal 230 V 50 Hz
Power Supply 230 V 50 Hz (From Heater)
These supply cables must be installed with the ferrite EMC filter.
This equipment must be EARTHED.

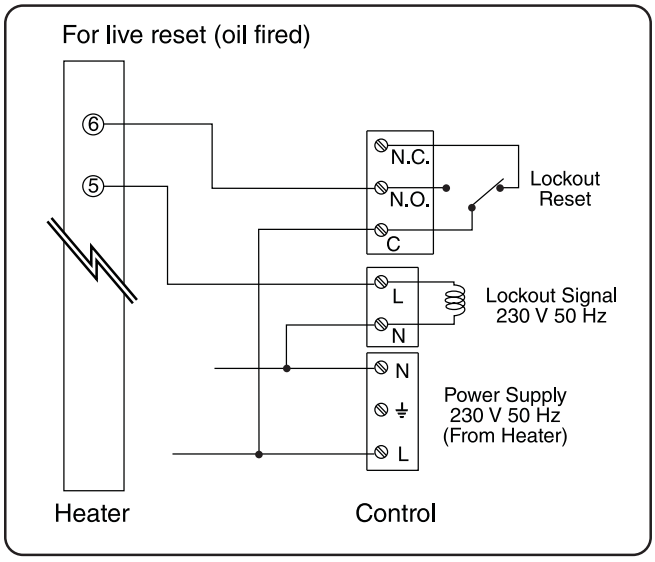
4.7 PGP/POP Range Wiring - 3 Ø Cabinet Heaters

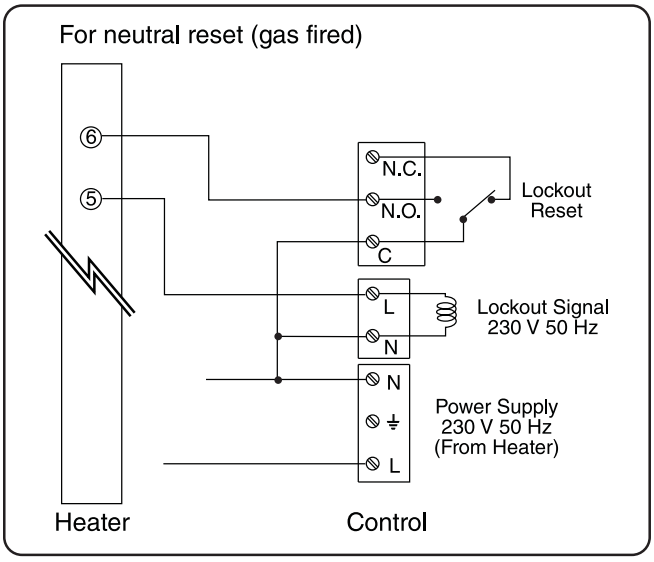

COMS PORT
0 -10 V DC MODULATING OUTPUT
REMOTE SENSORS
12 V
Override Pressure switch
INPUTS
Heater Teminals
For remote burner lockout warning and reset (where available) See Cabinet Heater Remote Lockout Reset Wiring Section.
Warm Air
Fan
Burner or Low Fire
High Fire
Relay 1
Relay 2
Relay 3
For heaters with 2 stage burner only. Connect High fire as shown on heater wiring diagram.
N.C.
N.O.
C
Lockout Reset
L
N
Lockout Signal 230 V 50 Hz
400 V 50 Hz 3 Ø Supply
Power Supply 230 V 50 Hz (From Heater)
These supply cables must be installed with the ferrite EMC filter.
This equipment must be EARTHED.

4.8 Cabinet Heater Remote Lockout Reset Wiring

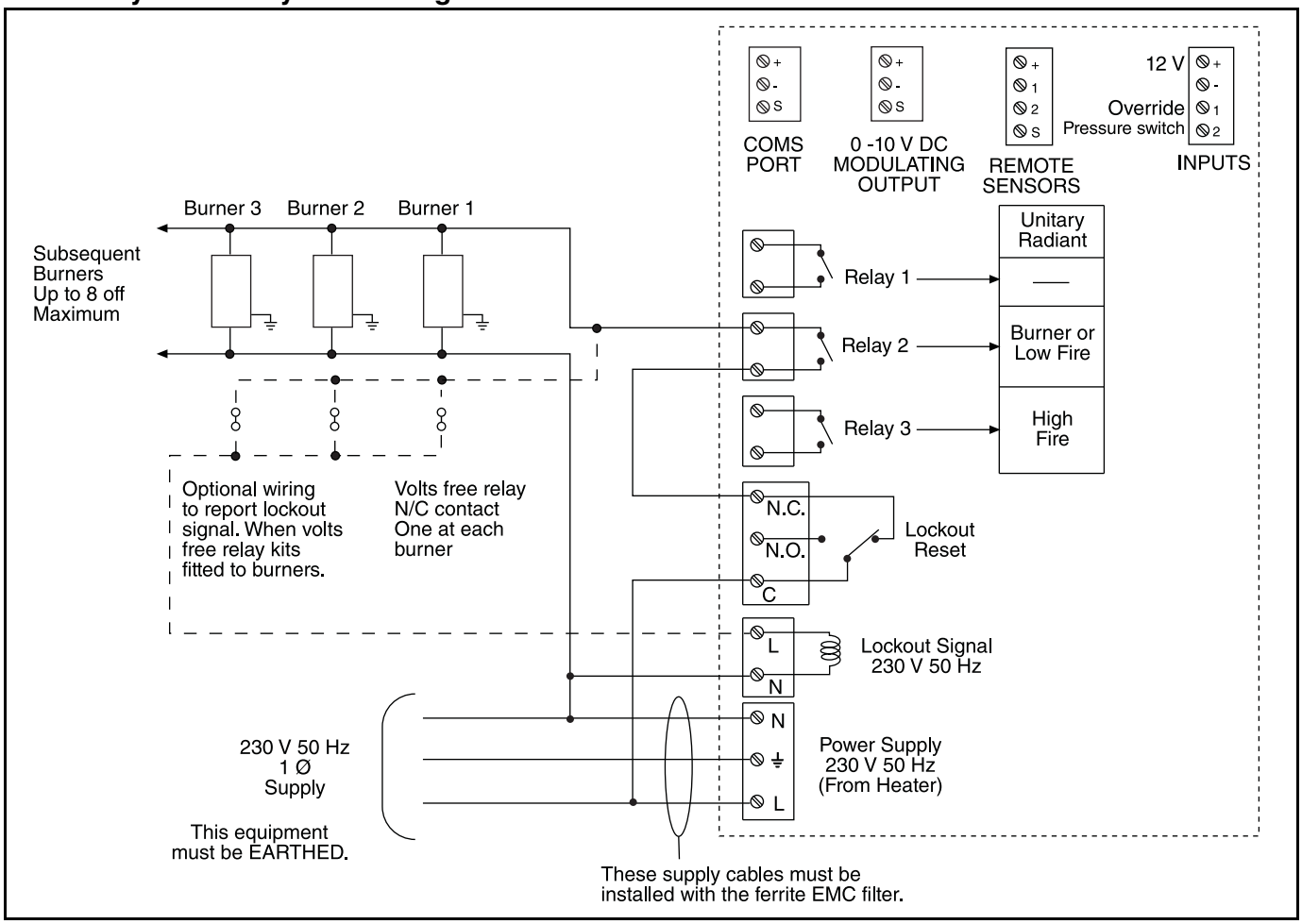
IMPORTANT
Look at the wiring diagram in the heater to determine if remote lockout reset is to neutral or live.
Improper connection will damage the burner control.

Only horizontal or external heaters are wired to accept remote lockout warning and reset facilities.





4.9 Unitary Radiant System Wiring



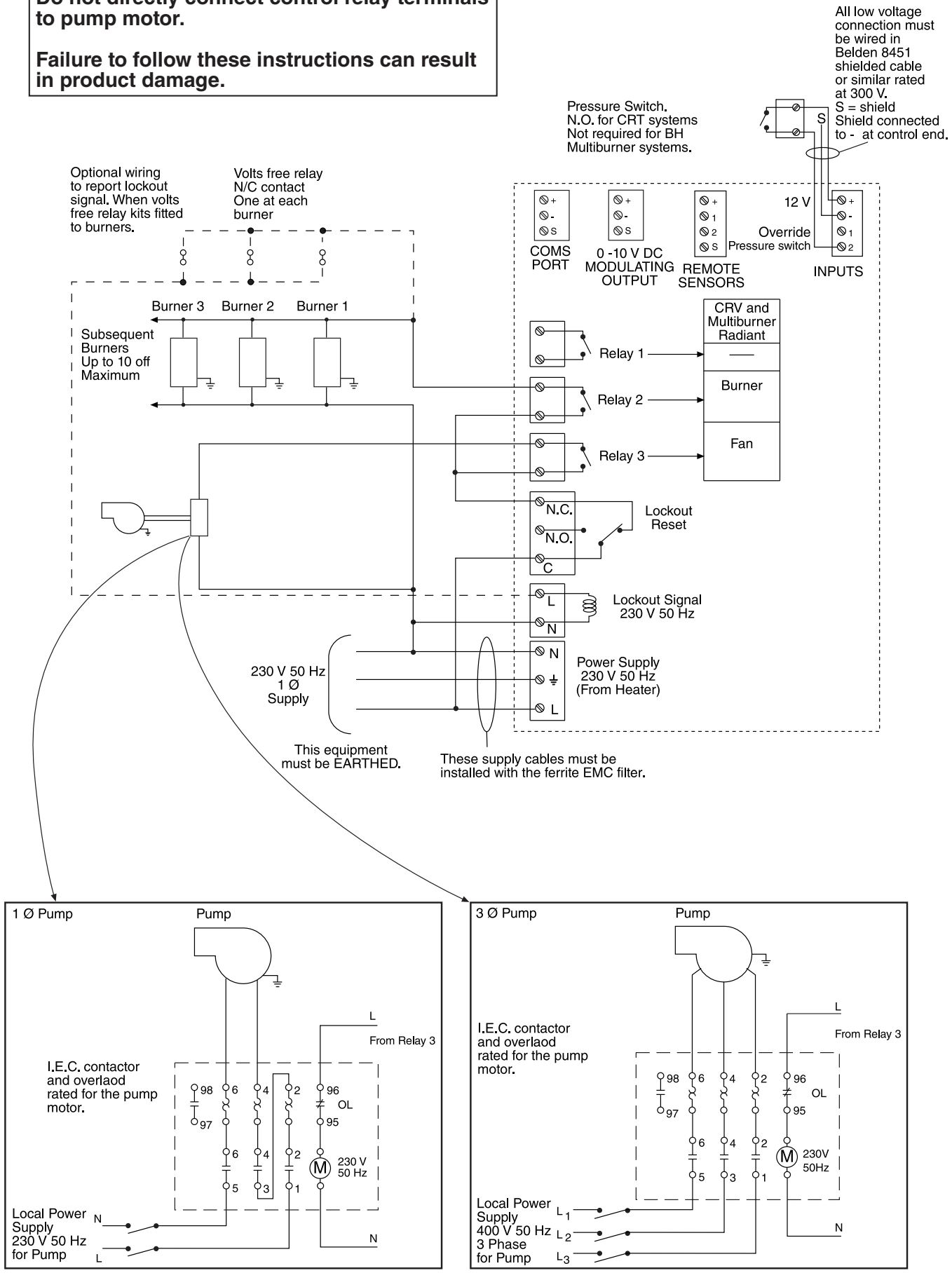
4.10 CORAYVAC® and Multiburner Systems Wiring

⚠CAUTION

Product Damage Hazard

Do not directly connect control relay terminals to pump motor.

Failure to follow these instructions can result in product damage.



SECTION 5: PROGRAMMING AND OPERATION

5.1 Stand Alone Unit

The control has three basic levels of operation / programming.
By default if a control is not connected to a network then it assumes stand alone status.

1. Open level where access is open to anyone at all times. *see Page 17, Section 5.3.2*.
2. Manager level, where settings may be changed for normal operation, accessed through the manager code, which may be changed to one that can be remembered by the user. *See Page 22, Section 5.5*.
3. Engineer level where system settings may be changed and accessed via the engineer code, which is not changeable. *See Page 28, Section 5.6*.

The following sections break down the tasks available and detail the steps to be taken in each level.

SEQUENCE FOR SETTINGS
Set the functions in the order:

1. Set Configuration; *Page 30, Section 5.6.3*.
2. Calibrate temperature sensor; *Page 33, Section 5.6.5*.
3. Set optimisation; *Page 29, Section 5.6.2*.

The remainder of the settings may be undertaken in any order.

5.2 Network Unit

For network units, all of the functions of *Section 5.1* are the same. The open level will allow similar functions on all network controls from a base unit or from any other network control, dependant on how the individual units have been site configured. *See Page 18, Section 5.4* for options.

Networked units will need to be configured for the network options. *See Page 28, Section 5.6.1*.

SEQUENCE FOR SETTINGS

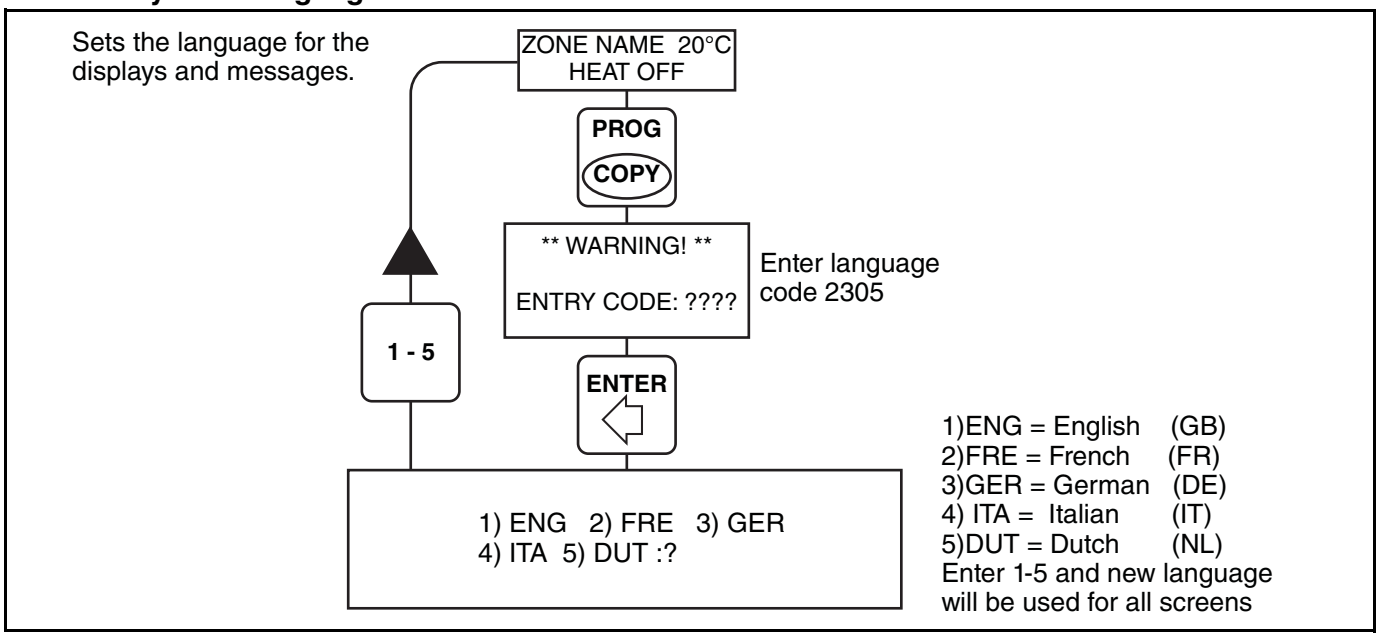
1. Configure each control for the network. *See Page 28, Section 5.6.1*.
2. Configure each controller for its use with the engineers code. *See Page 28, Section 5.6*.
3. Set operational settings with the manager code. *See Page 22, Section 5.5*.

Sequences 1 and 2 must be carried out at each networked station and may be carried out together. Sequence 3 may be carried out from any "full control" station for all other stations where the operating times and temperatures may be copied from one control to another.

5.3 System Language

The ROBERTS GORDON® NRG Control has been programmed to display in 5 languages.
To select or change the language *See Section 5.3.1*.

5.3.1 Set System Language

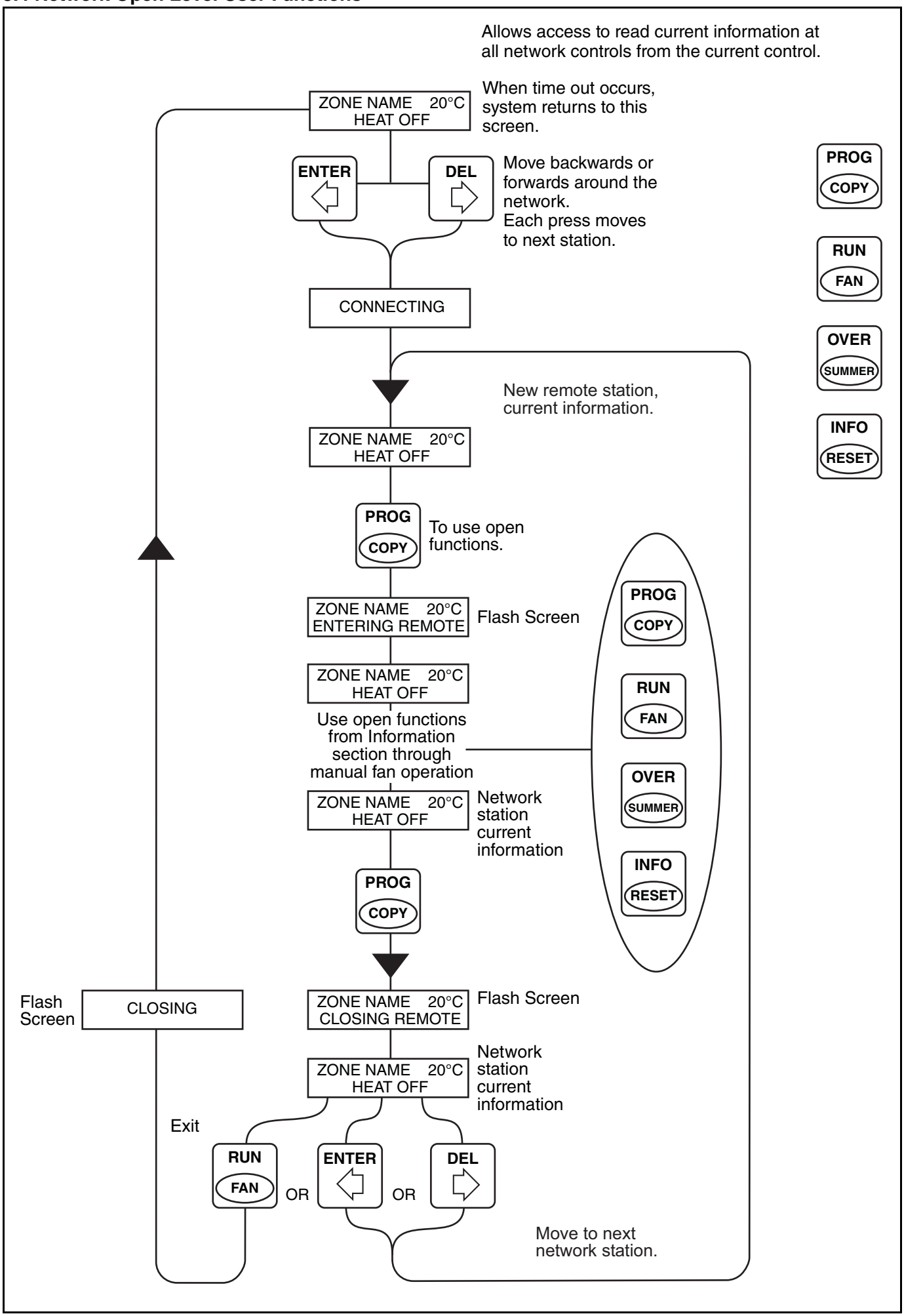

Sets the language for the displays and messages.
ZONE NAME 20°C
HEAT OFF
PROG
COPY
** WARNING! **
ENTRY CODE: ????
Enter language code 2305
1 - 5
ENTER
1) ENG 2) FRE 3) GER
4) ITA 5) DUT :?
1)ENG = English (GB)
2)FRE = French (FR)
3)GER = German (DE)
4) ITA = Italian (IT)
5)DUT = Dutch (NL)
Enter 1-5 and new language will be used for all screens

5.3.2 Default Settings

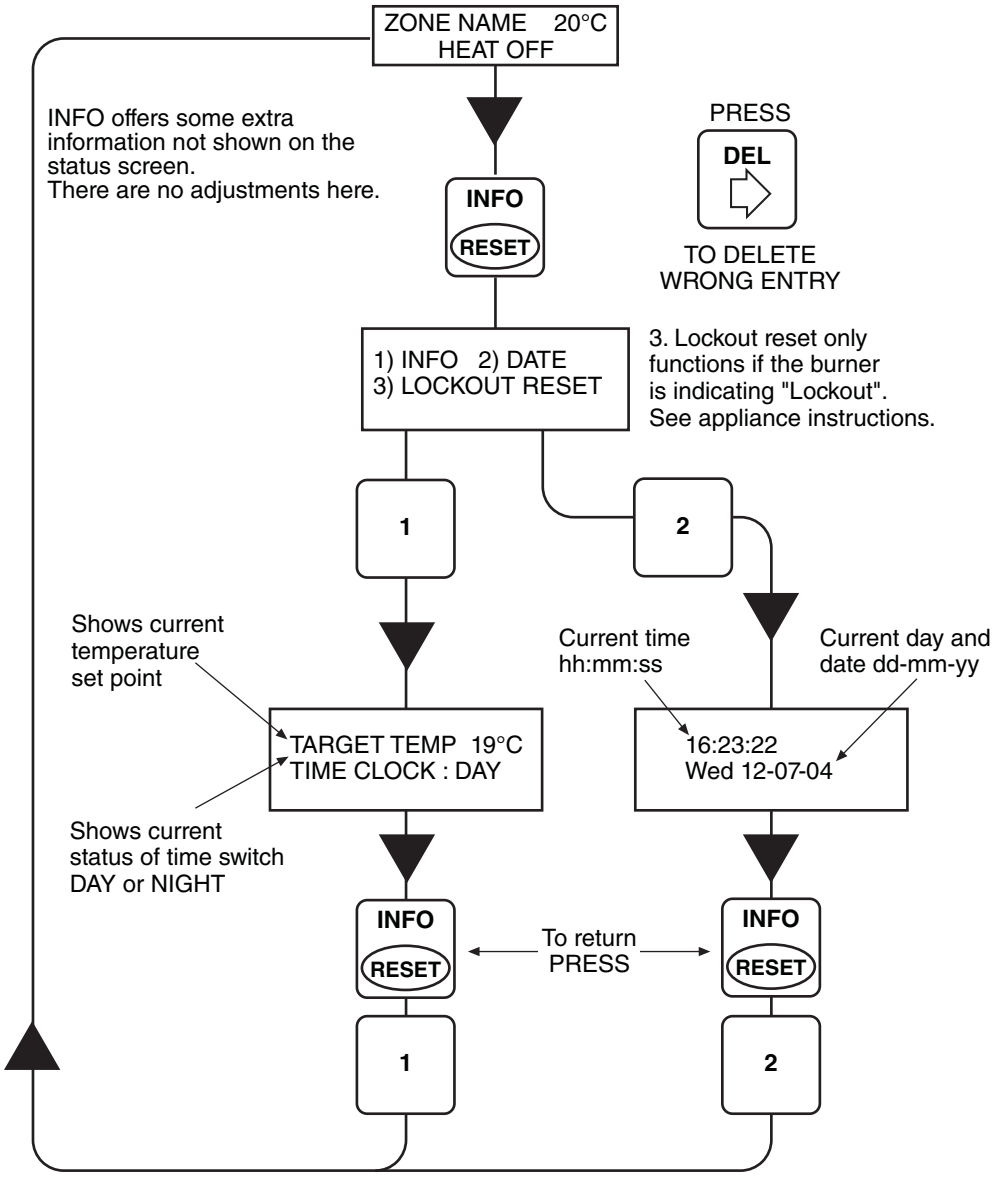
The following settings are factory defaults and will be active following a system reset.

Function	Section	Default Setting
Network Setting		Stand Alone
Network Defaults		
Network Access Code	*5.6.1*	Empty
Network Configuration Code		4143 Fixed
Network ID	*5.6.1*	00
Control Name	*5.6.1*	Empty
Network Access	*5.6.1*	Full
Burner Lockout Reset from Network	*5.6.1*	Off
Manager Setting Defaults		
Manager Access Code	*5.5.4*	0000
User Access Code	*5.5.4*	0000
Daytime Temperature	*5.5.2*	20° C
Night Temperature	*5.5.2*	04° C
Operating Times	*5.5.3*	08:00 17:00 Mon - Fri OFF Sat - Sun
Engineer Setting Defaults		
Engineer Access Code		6343 fixed
Optimisation	*5.6.2*	On
Rate of Change		On 15 minutes / °
Maximum Pre-Heat Hours		02
Burner Operation	*5.6.3*	On/Off
Burner Modulation		Off
Differential		02°
Double Ignition		0 OFF (Always Leave OFF)

5.4 Network Open Level User Functions



5.4.1 Information



5.4.2 Lockout Reset

⚠ WARNING

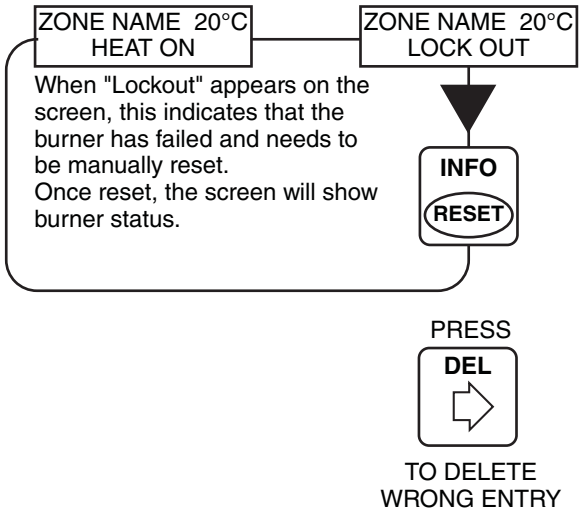
Explosion Hazard

If control locks out, do not make more than three attempts to restart the heater.

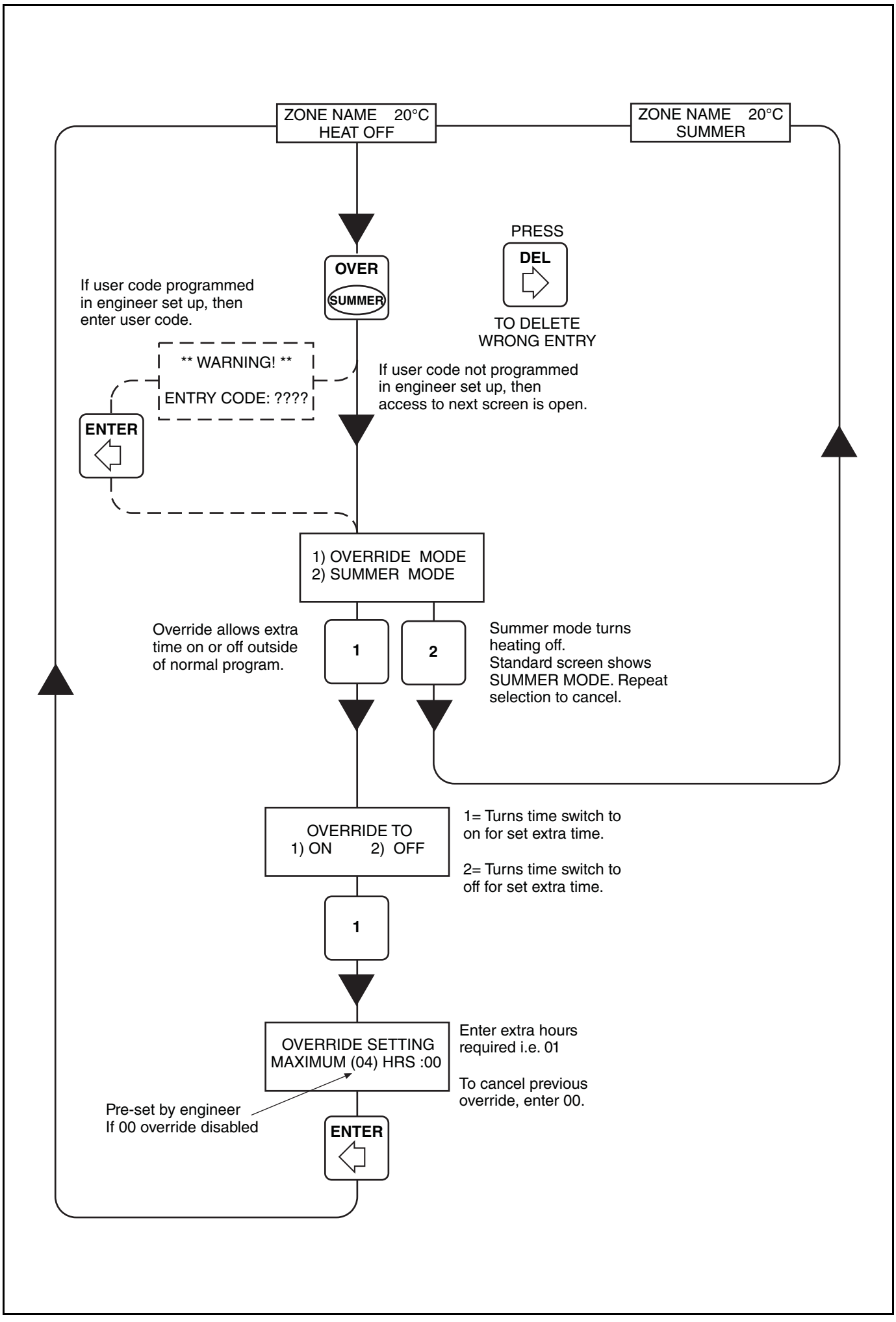
Dangerous gas mixtures can build up.

The fault must be traced and repaired by a registered installer or service engineer.

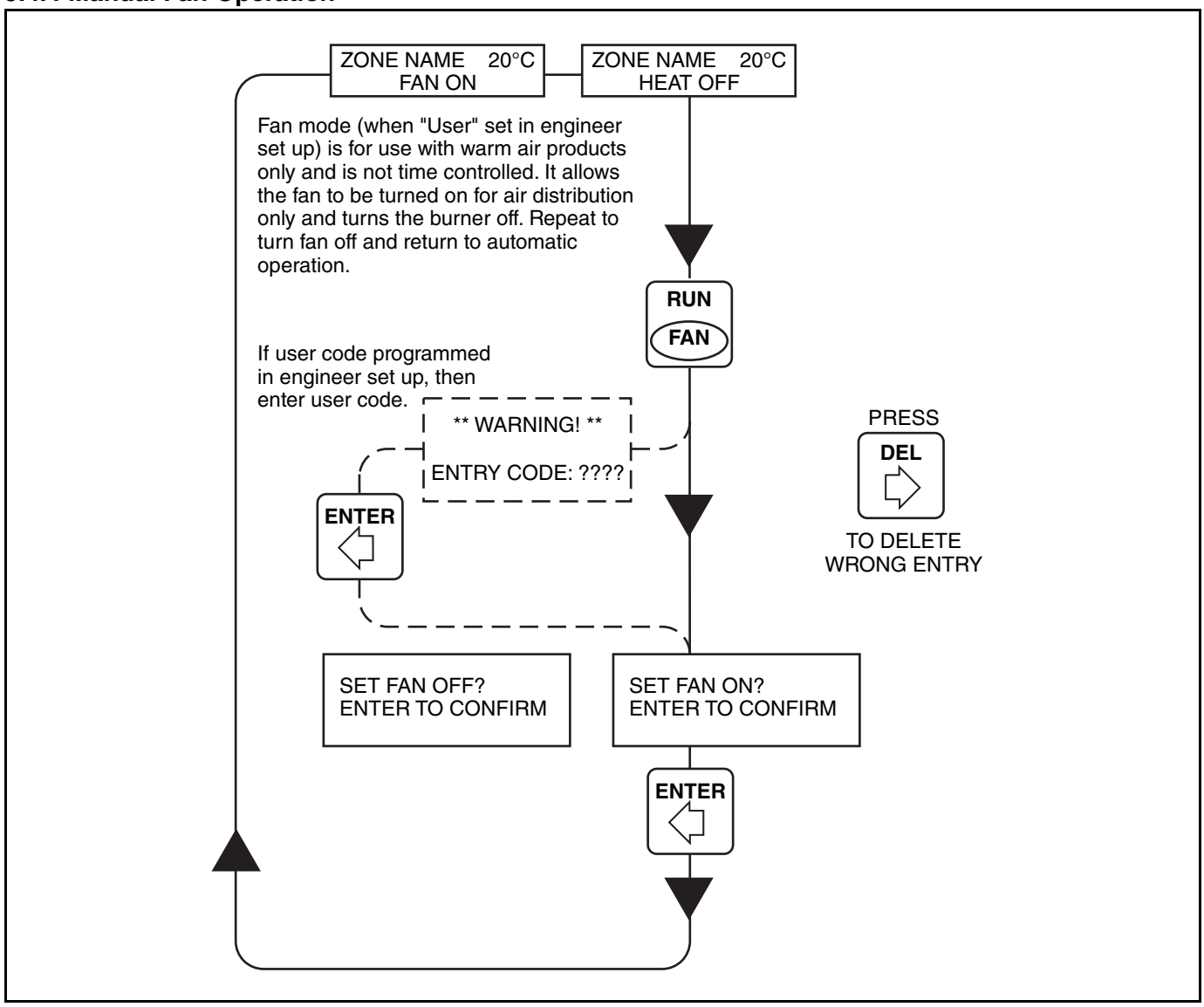
Failure to follow these instructions can result in death, injury or property damage.


ZONE NAME 20°C
HEAT ON
ZONE NAME 20°C
LOCK OUT
When "Lockout" appears on the screen, this indicates that the burner has failed and needs to be manually reset.
Once reset, the screen will show burner status.
INFO
RESET
PRESS
DEL
TO DELETE WRONG ENTRY

5.4.3 Override and Summer Mode



5.4.4 Manual Fan Operation

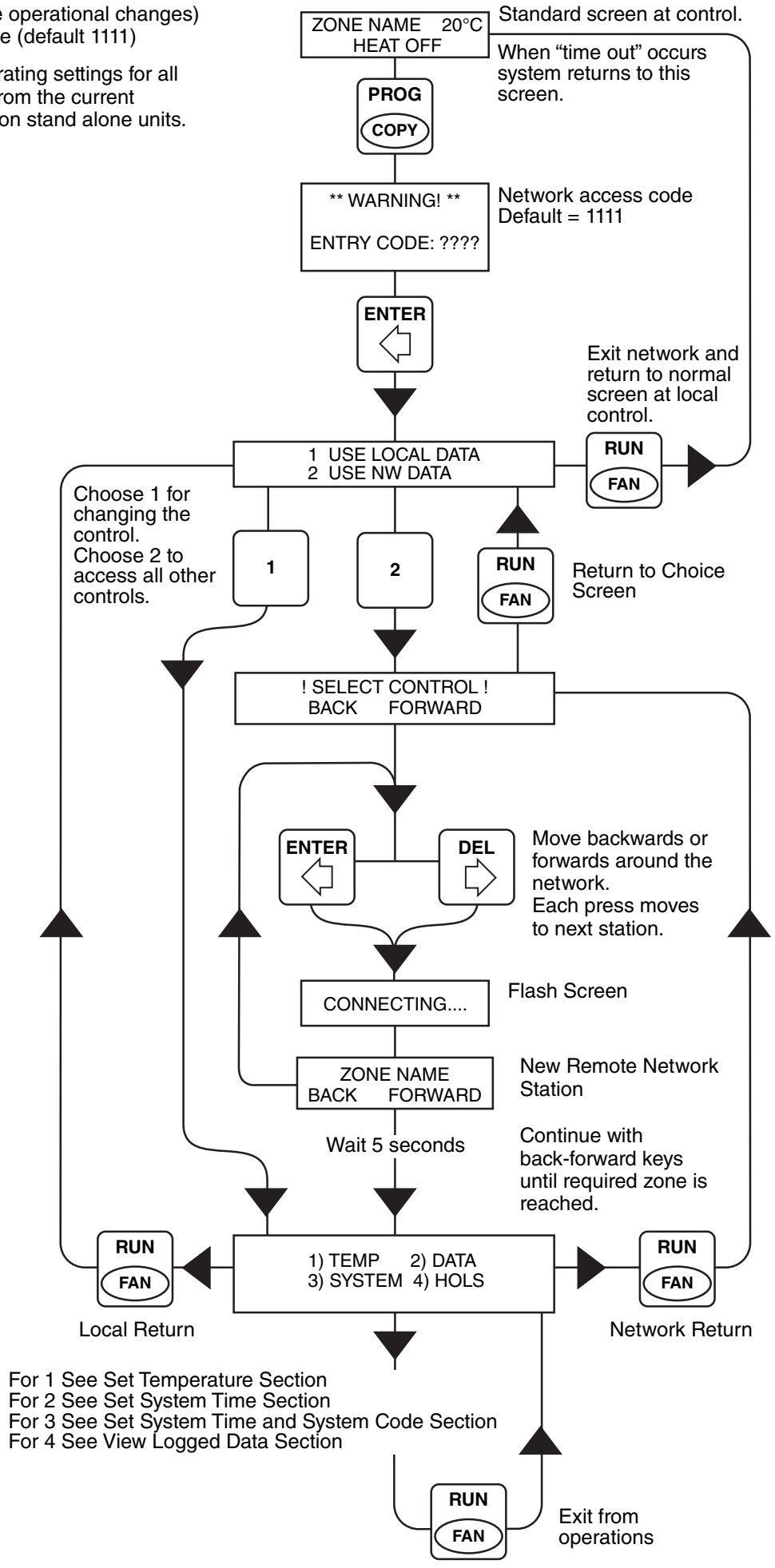

ZONE NAME 20°C
FAN ON
ZONE NAME 20°C
HEAT OFF
Fan mode (when "User" set in engineer set up) is for use with warm air products only and is not time controlled. It allows the fan to be turned on for air distribution only and turns the burner off. Repeat to turn fan off and return to automatic operation.
RUN
FAN
If user code programmed in engineer set up, then enter user code.
** WARNING! **
ENTRY CODE: ????
ENTER
PRESS
DEL
TO DELETE WRONG ENTRY
SET FAN OFF?
ENTER TO CONFIRM
SET FAN ON?
ENTER TO CONFIRM
ENTER

5.5 Manager Settings

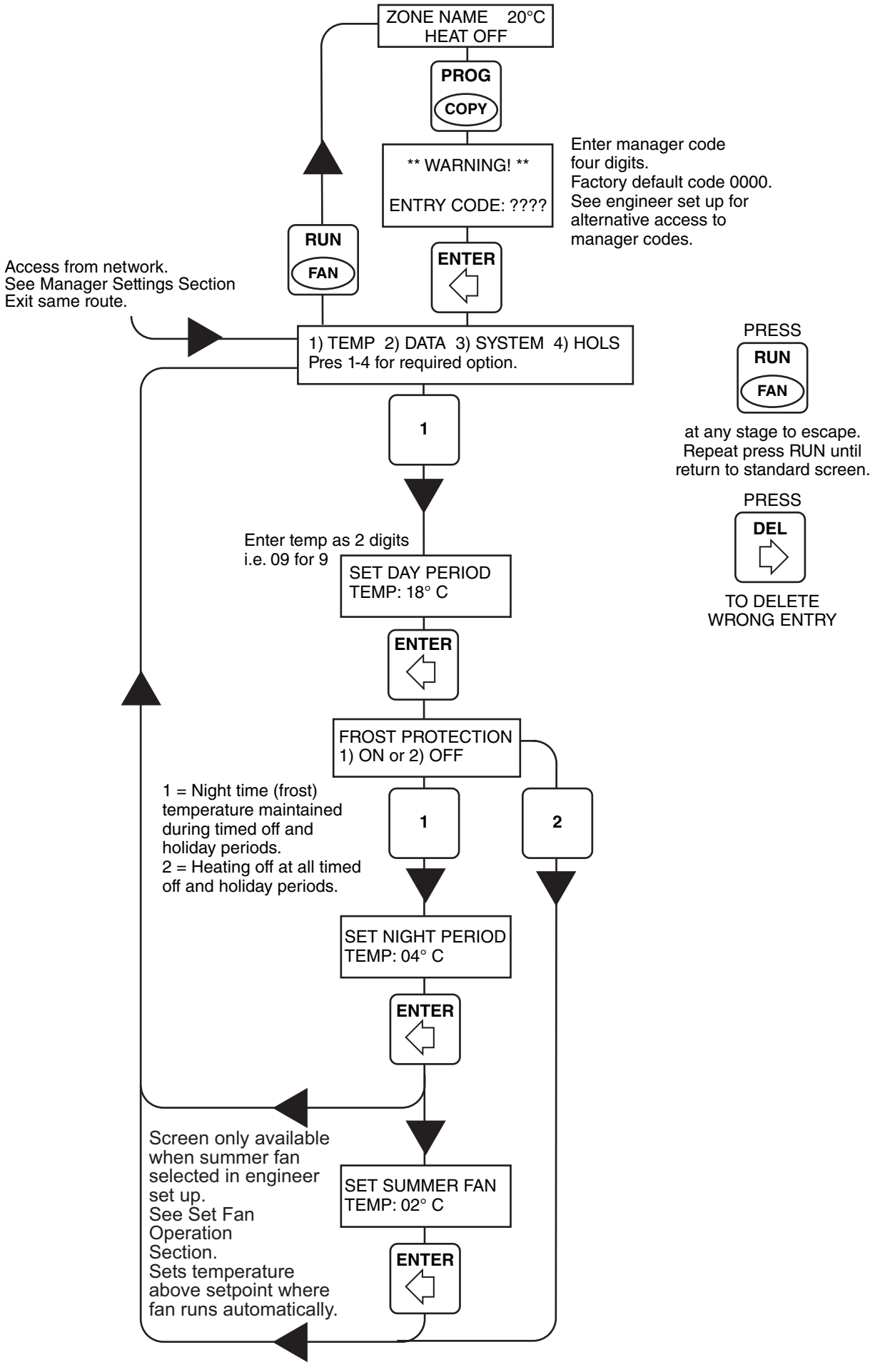
5.5.1 Manager Network Access

Network access (to make operational changes) from network access code (default 1111)

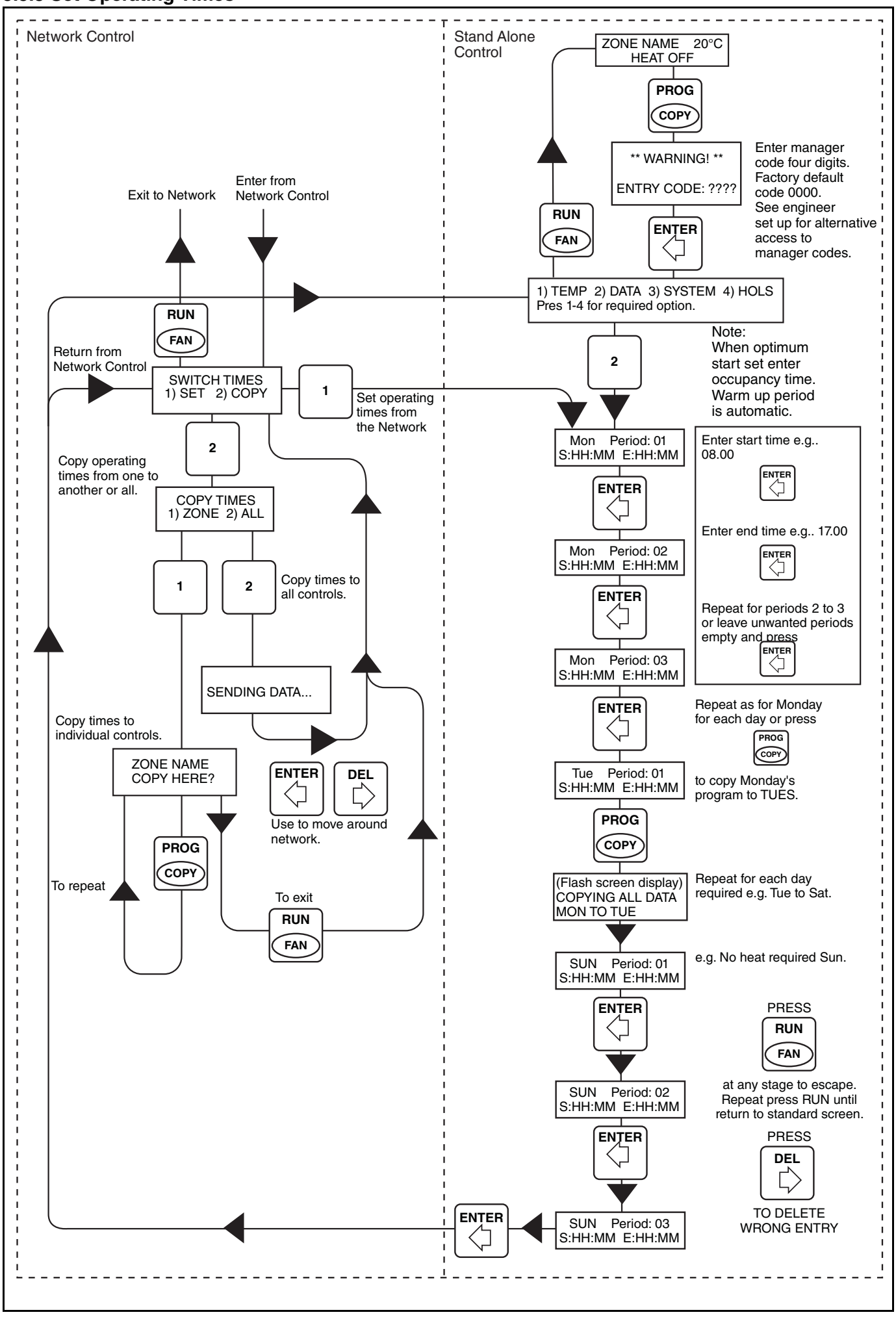
Allows access to set operating settings for all controls on the network from the current location. Not operational on stand alone units.



5.5.2 Set Temperature



5.5.3 Set Operating Times

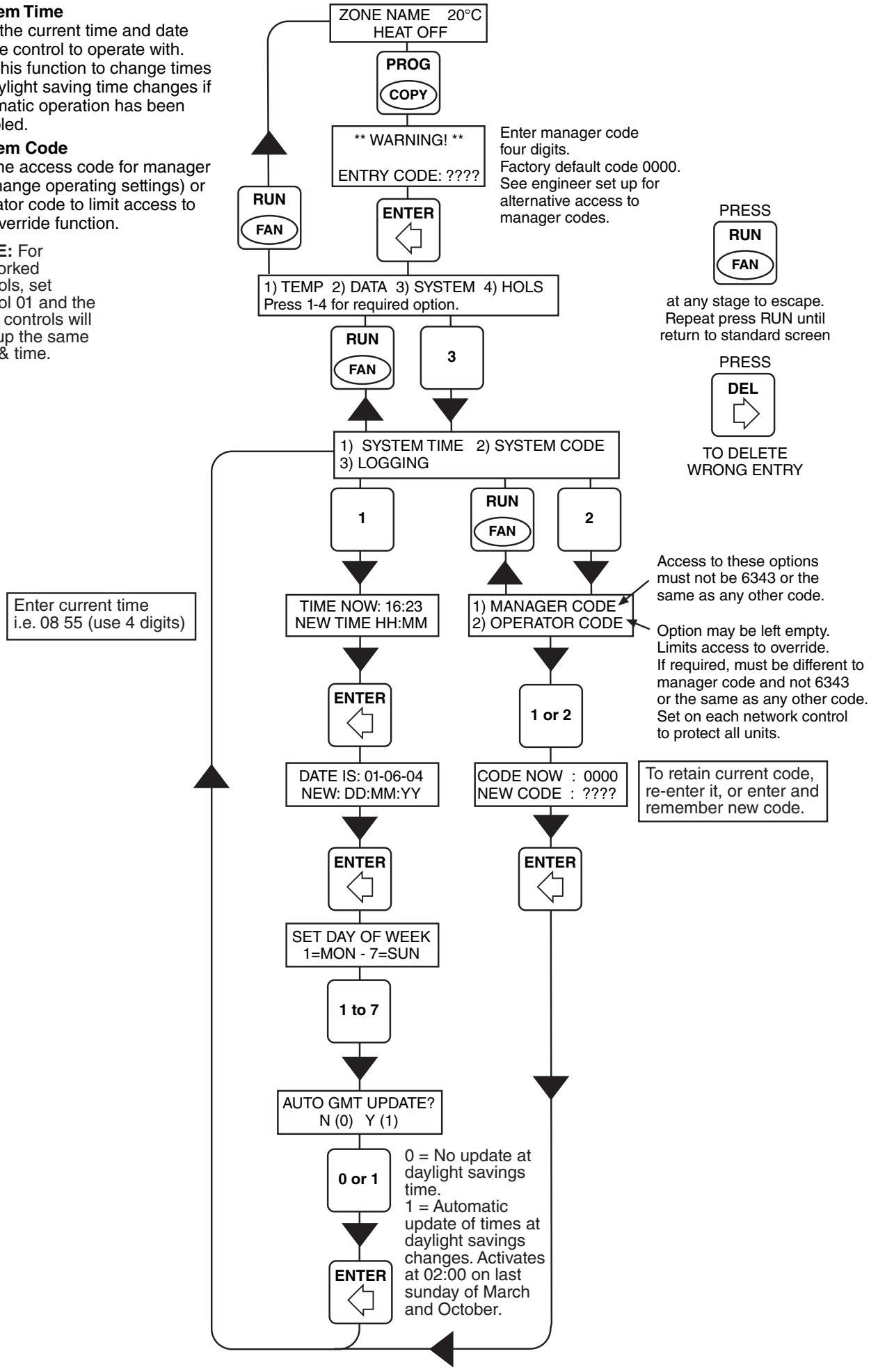


5.5.4 Set System Time and System Code

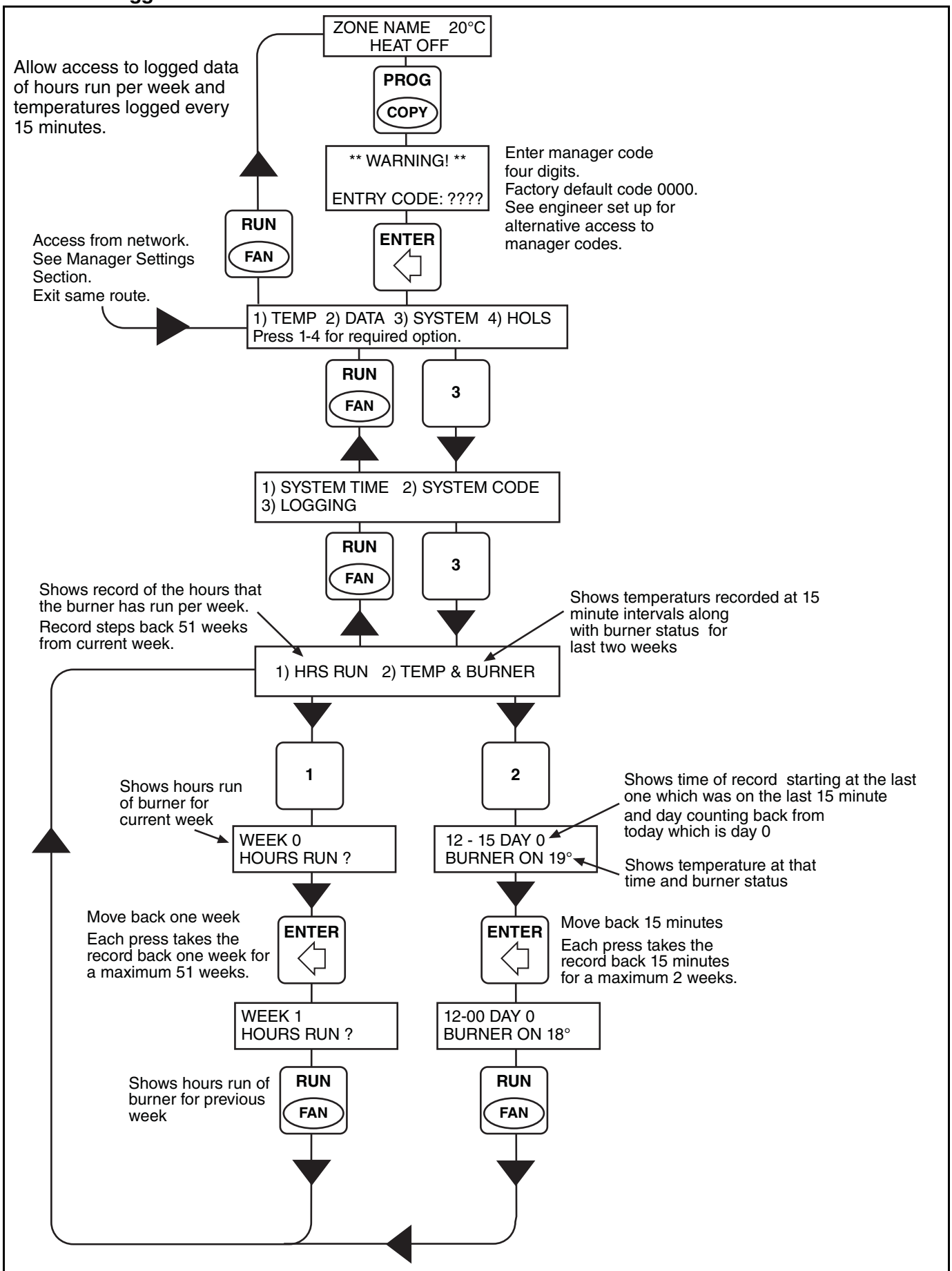
System Time
Sets the current time and date for the control to operate with. Use this function to change times at daylight saving time changes if automatic operation has been disabled.

System Code
Set the access code for manager (to change operating settings) or operator code to limit access to the override function.

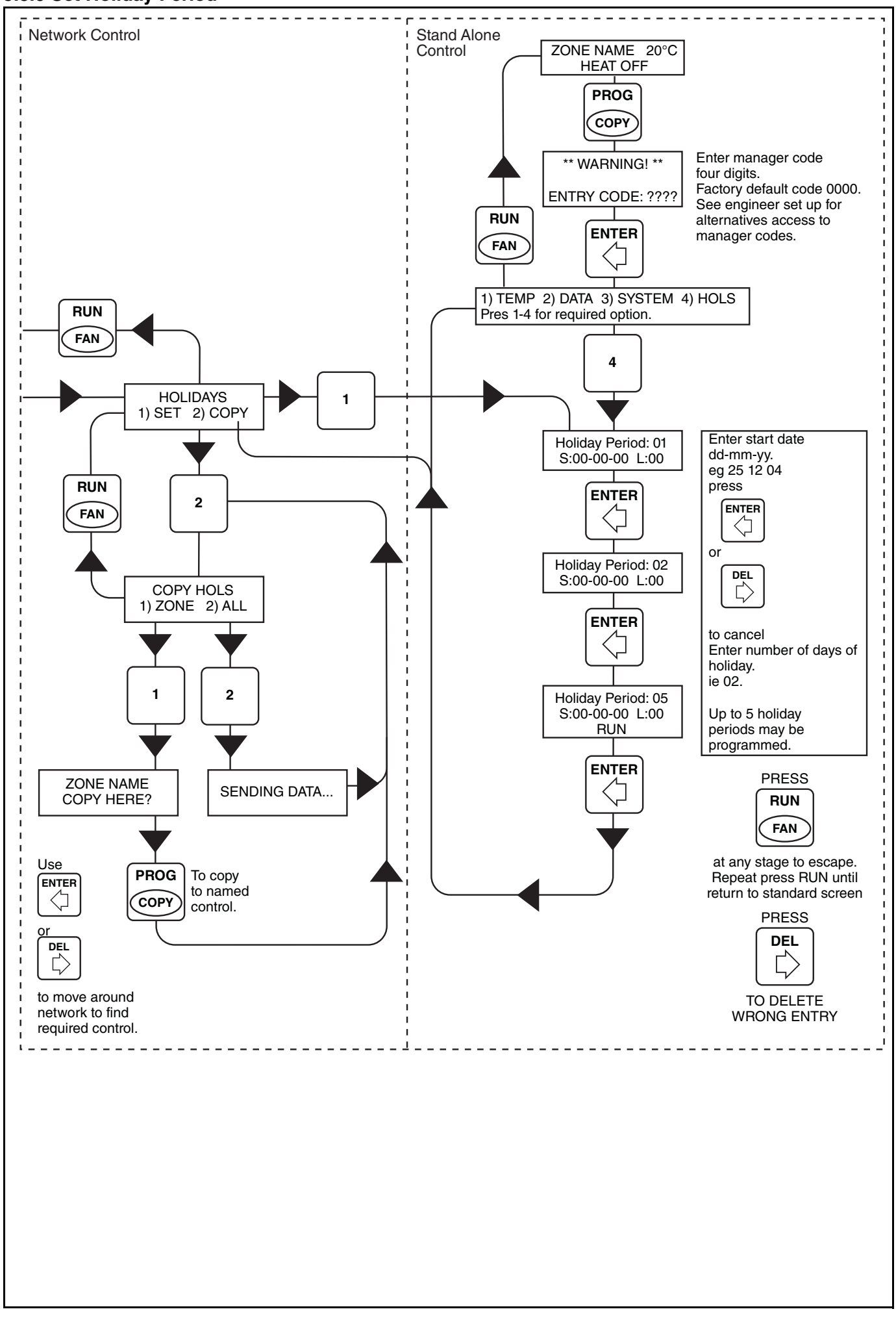
NOTE: For networked controls, set control 01 and the other controls will pick up the same date & time.


ZONE NAME 20°C
HEAT OFF
PROG
COPY
** WARNING! **
ENTRY CODE: ????
Enter manager code four digits.
Factory default code 0000.
See engineer set up for alternative access to manager codes.
RUN
FAN
ENTER
PRESS
RUN
FAN
at any stage to escape.
Repeat press RUN until return to standard screen
1) TEMP 2) DATA 3) SYSTEM 4) HOLS
Press 1-4 for required option.
RUN
FAN
3
PRESS
DEL
TO DELETE WRONG ENTRY
1) SYSTEM TIME 2) SYSTEM CODE
3) LOGGING
1
RUN
FAN
2
Access to these options must not be 6343 or the same as any other code.
Enter current time
i.e. 08 55 (use 4 digits)
TIME NOW: 16:23
NEW TIME HH:MM
1) MANAGER CODE
2) OPERATOR CODE
Option may be left empty. Limits access to override. If required, must be different to manager code and not 6343 or the same as any other code. Set on each network control to protect all units.
ENTER
1 or 2
DATE IS: 01-06-04
NEW: DD:MM:YY
CODE NOW : 0000
NEW CODE : ????
To retain current code, re-enter it, or enter and remember new code.
ENTER
ENTER
SET DAY OF WEEK
1=MON - 7=SUN
1 to 7
AUTO GMT UPDATE?
N (0) Y (1)
0 or 1
0 = No update at daylight savings time.
1 = Automatic update of times at daylight savings changes. Activates at 02:00 on last sunday of March and October.
ENTER

5.5.5 View Logged Data


ZONE NAME 20°C
HEAT OFF
PROG
COPY
** WARNING! **
ENTRY CODE: ????
ENTER
RUN
FAN
Allow access to logged data of hours run per week and temperatures logged every 15 minutes.
Enter manager code four digits.
Factory default code 0000.
See engineer set up for alternative access to manager codes.
Access from network.
See Manager Settings Section.
Exit same route.
1) TEMP 2) DATA 3) SYSTEM 4) HOLS
Press 1-4 for required option.
3
1) SYSTEM TIME 2) SYSTEM CODE
3) LOGGING
Shows record of the hours that the burner has run per week.
Record steps back 51 weeks from current week.
Shows temperaturs recorded at 15 minute intervals along with burner status for last two weeks
1) HRS RUN 2) TEMP & BURNER
1
2
Shows hours run of burner for current week
WEEK 0
HOURS RUN ?
12 - 15 DAY 0
BURNER ON 19°
Shows time of record starting at the last one which was on the last 15 minute and day counting back from today which is day 0
Shows temperature at that time and burner status
Move back one week
Each press takes the record back one week for a maximum 51 weeks.
Move back 15 minutes
Each press takes the record back 15 minutes for a maximum 2 weeks.
WEEK 1
HOURS RUN ?
12-00 DAY 0
BURNER ON 18°
Shows hours run of burner for previous week

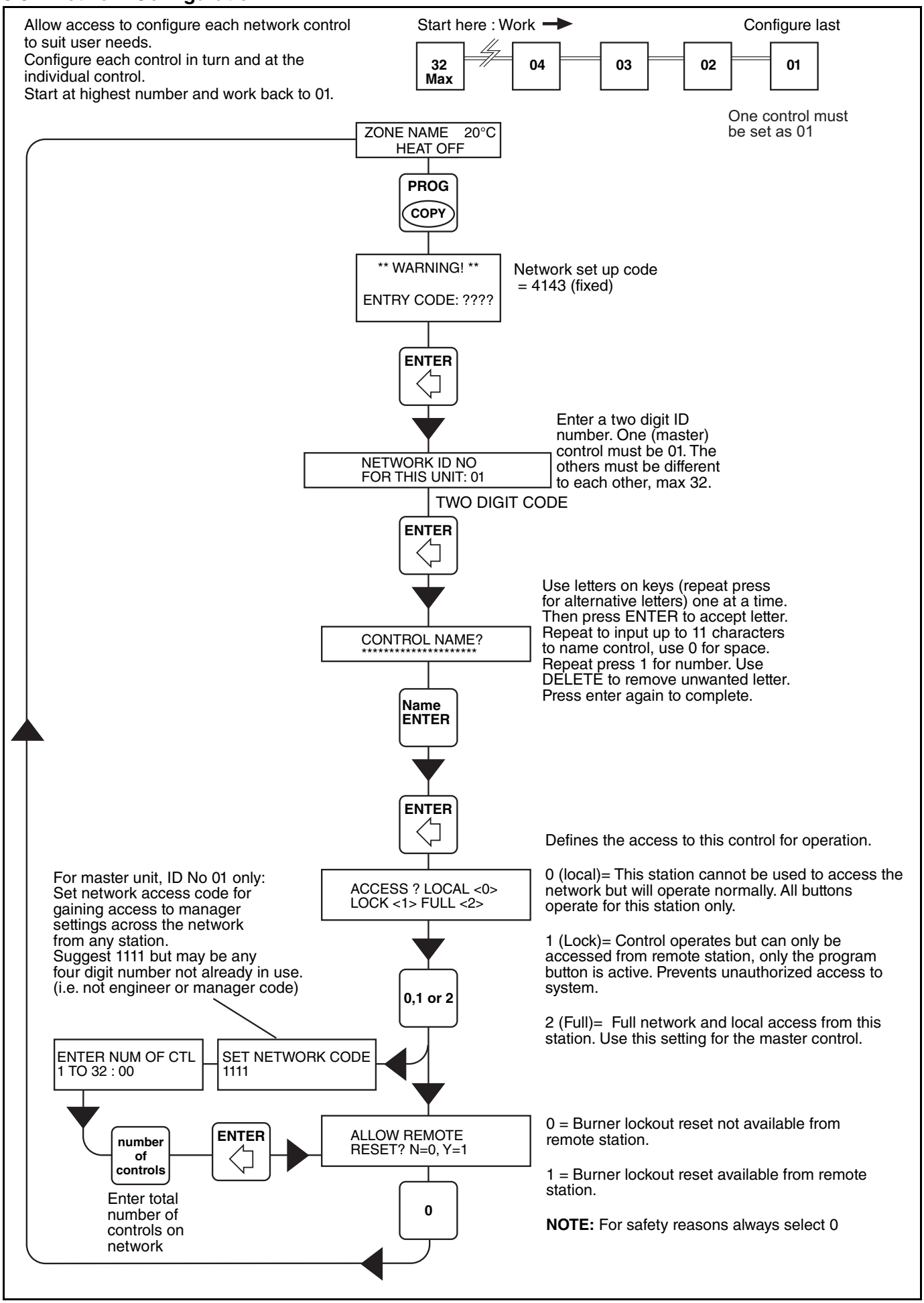
5.5.6 Set Holiday Period



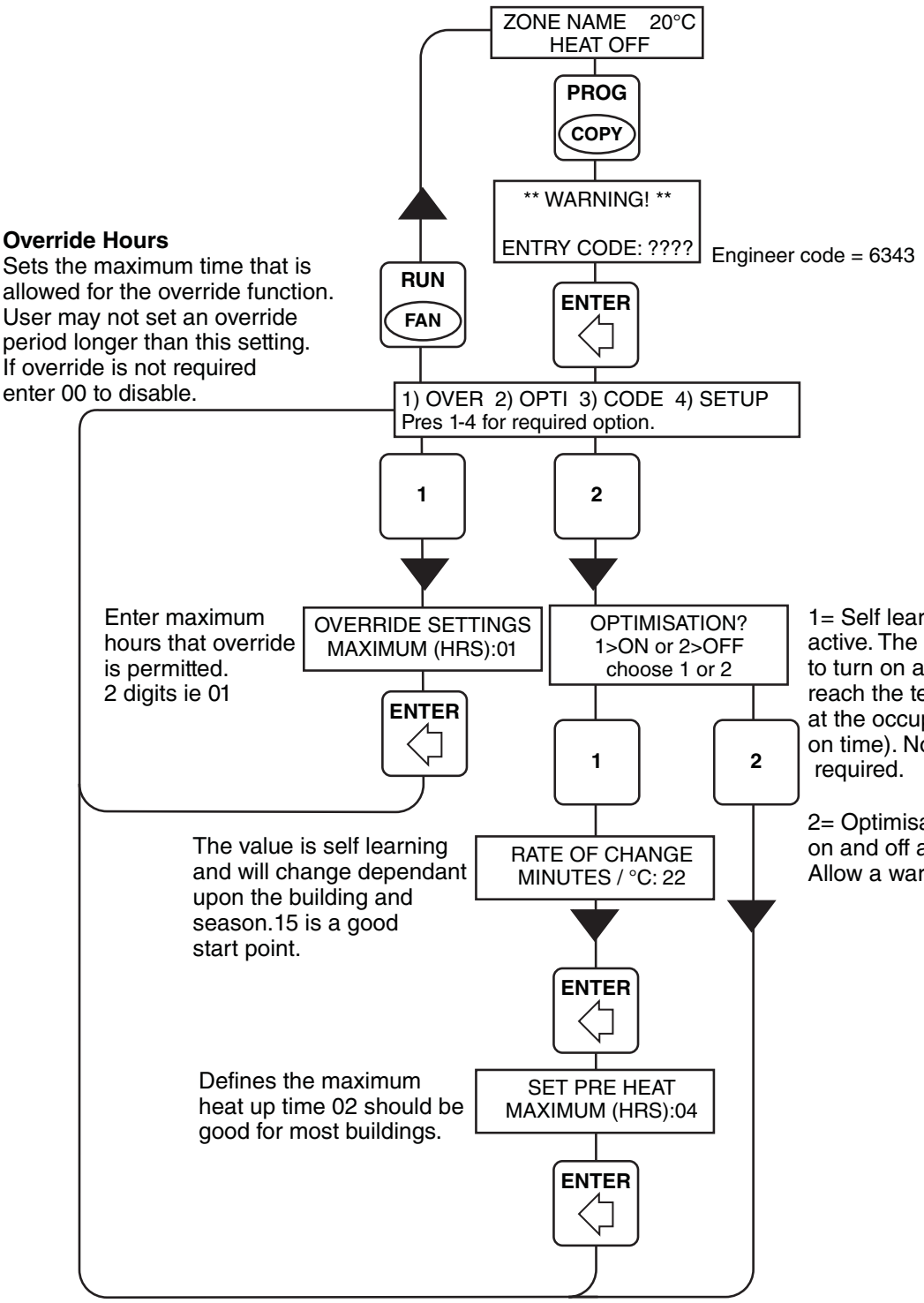
5.6 Engineer Settings

All engineer settings must be carried out at the individual control.

5.6.1 Network Configuration


Allow access to configure each network control to suit user needs.
Configure each control in turn and at the individual control.
Start at highest number and work back to 01.
Start here : Work
Configure last
32 Max
04
03
02
01
One control must be set as 01
ZONE NAME 20°C
HEAT OFF
PROG
COPY
** WARNING! **
ENTRY CODE: ????
Network set up code = 4143 (fixed)
ENTER
NETWORK ID NO FOR THIS UNIT: 01
Enter a two digit ID number. One (master) control must be 01. The others must be different to each other, max 32.
TWO DIGIT CODE
ENTER
CONTROL NAME?
****
Use letters on keys (repeat press for alternative letters) one at a time. Then press ENTER to accept letter. Repeat to input up to 11 characters to name control, use 0 for space. Repeat press 1 for number. Use DELETE to remove unwanted letter. Press enter again to complete.
Name ENTER
ENTER
Defines the access to this control for operation.
For master unit, ID No 01 only: Set network access code for gaining access to manager settings across the network from any station. Suggest 1111 but may be any four digit number not already in use. (i.e. not engineer or manager code)
ACCESS ? LOCAL <0> LOCK <1> FULL <2>
0 (local)= This station cannot be used to access the network but will operate normally. All buttons operate for this station only.
1 (Lock)= Control operates but can only be accessed from remote station, only the program button is active. Prevents unauthorized access to system.
0,1 or 2
2 (Full)= Full network and local access from this station. Use this setting for the master control.
ENTER NUM OF CTL 1 TO 32 : 00
SET NETWORK CODE 1111
number of controls
ENTER
ALLOW REMOTE RESET? N=0, Y=1
0 = Burner lockout reset not available from remote station.
1 = Burner lockout reset available from remote station.
NOTE: For safety reasons always select 0
Enter total number of controls on network
0

5.6.2 Set Override Hours and Optimisation



Override Hours
Sets the maximum time that is allowed for the override function. User may not set an override period longer than this setting. If override is not required enter 00 to disable.

Enter maximum hours that override is permitted. 2 digits ie 01

1= Self learning optimum start active. The heater will operate to turn on as late as possible to reach the temperature set point at the occupancy time (the set on time). No warm up period is required.

2= Optimisation off, heater turns on and off at the set times. Allow a warm up period, if required.

The value is self learning and will change dependant upon the building and season.15 is a good start point.

Defines the maximum heat up time 02 should be good for most buildings.

5.6.3 Set Access Code and Configure

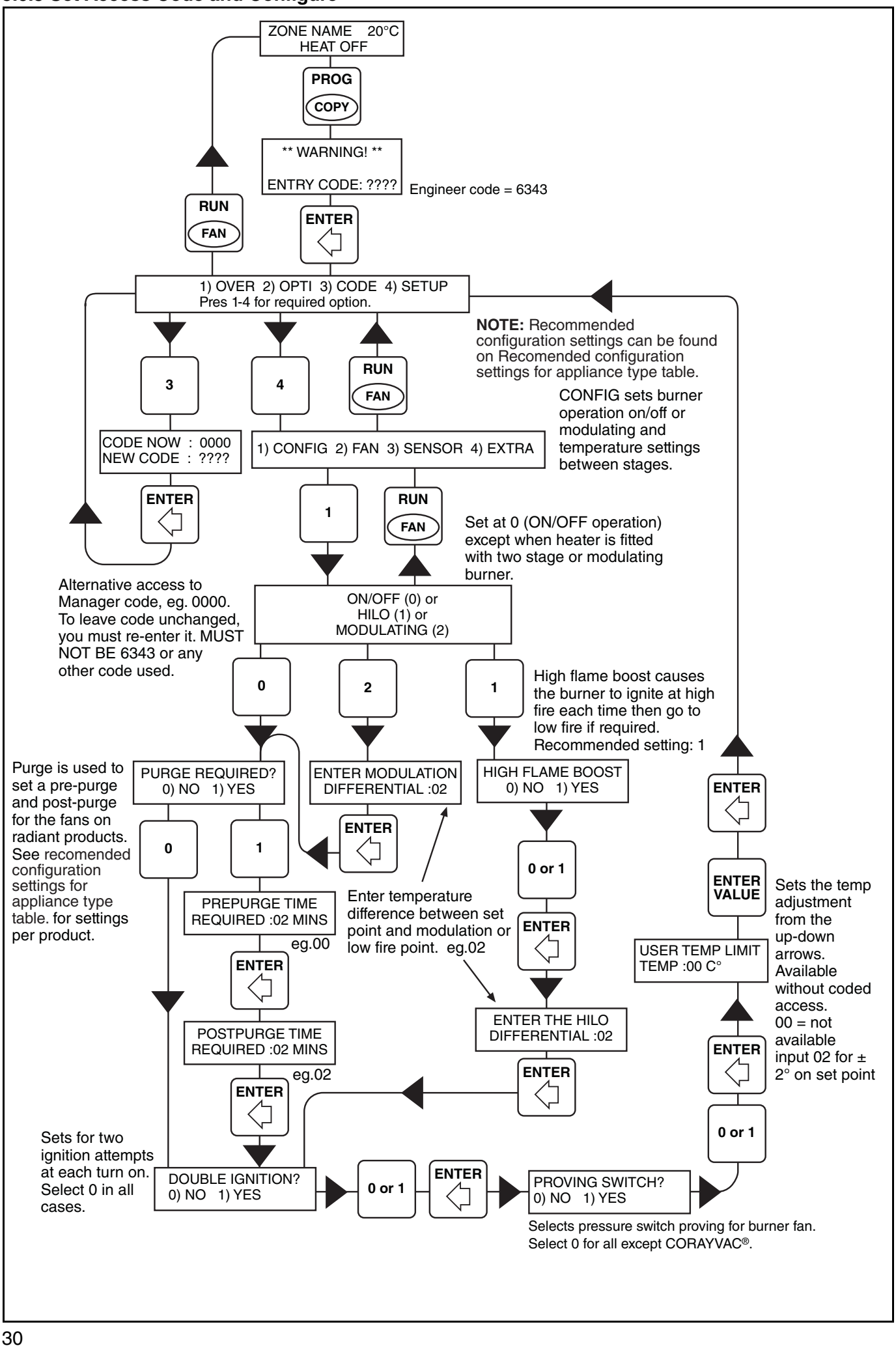
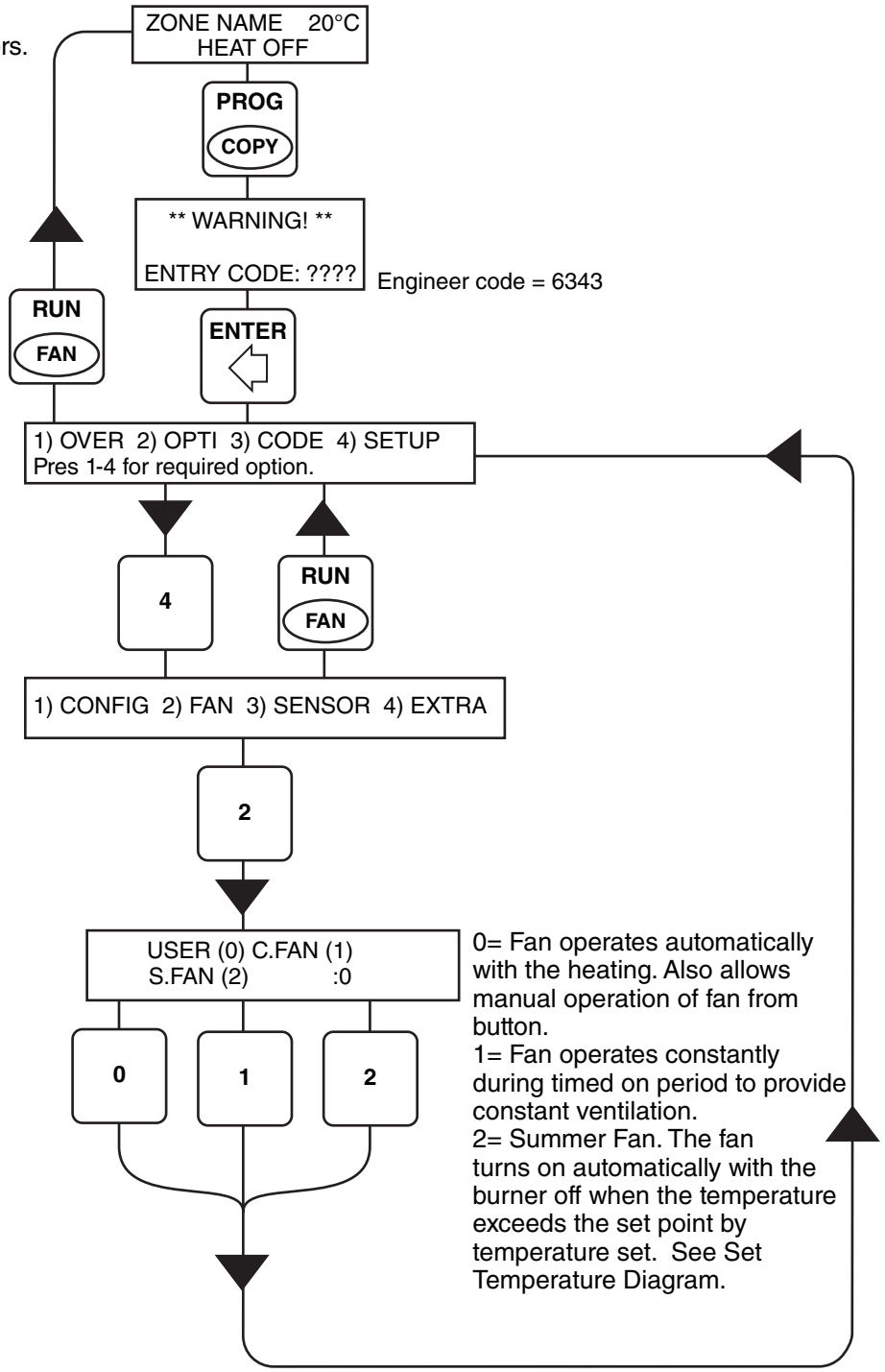

ZONE NAME 20°C
HEAT OFF
PROG
COPY
** WARNING! **
ENTRY CODE: ????
Engineer code = 6343
RUN
FAN
ENTER
1) OVER 2) OPTI 3) CODE 4) SETUP
Pres 1-4 for required option.
NOTE: Recommended configuration settings can be found on Recomended configuration settings for appliance type table.
3
4
RUN
FAN
CONFIG sets burner operation on/off or modulating and temperature settings between stages.
CODE NOW : 0000
NEW CODE : ????
1) CONFIG 2) FAN 3) SENSOR 4) EXTRA
ENTER
1
RUN
FAN
Set at 0 (ON/OFF operation) except when heater is fitted with two stage or modulating burner.
Alternative access to Manager code, eg. 0000. To leave code unchanged, you must re-enter it. MUST NOT BE 6343 or any other code used.
ON/OFF (0) or
HILO (1) or
MODULATING (2)
0
2
1
High flame boost causes the burner to ignite at high fire each time then go to low fire if required. Recommended setting: 1
Purge is used to set a pre-purge and post-purge for the fans on radiant products. See recomended configuration settings for appliance type table. for settings per product.
PURGE REQUIRED?
0) NO 1) YES
ENTER MODULATION DIFFERENTIAL :02
HIGH FLAME BOOST
0) NO 1) YES
ENTER
0
1
ENTER
0 or 1
ENTER
PREPURGE TIME
REQUIRED :02 MINS
eg.00
Enter temperature difference between set point and modulation or low fire point. eg.02
ENTER
ENTER VALUE
Sets the temp adjustment from the up-down arrows. Available without coded access. 00 = not available input 02 for ± 2° on set point
USER TEMP LIMIT
TEMP :00 C°
ENTER
POSTPURGE TIME
REQUIRED :02 MINS
eg.02
ENTER THE HILO
DIFFERENTIAL :02
ENTER
ENTER
ENTER
0 or 1
Sets for two ignition attempts at each turn on. Select 0 in all cases.
DOUBLE IGNITION?
0) NO 1) YES
0 or 1
ENTER
PROVING SWITCH?
0) NO 1) YES
Selects pressure switch proving for burner fan. Select 0 for all except CORAYVAC®.

Table 1: Recommended Configuration Settings for Appliance Type

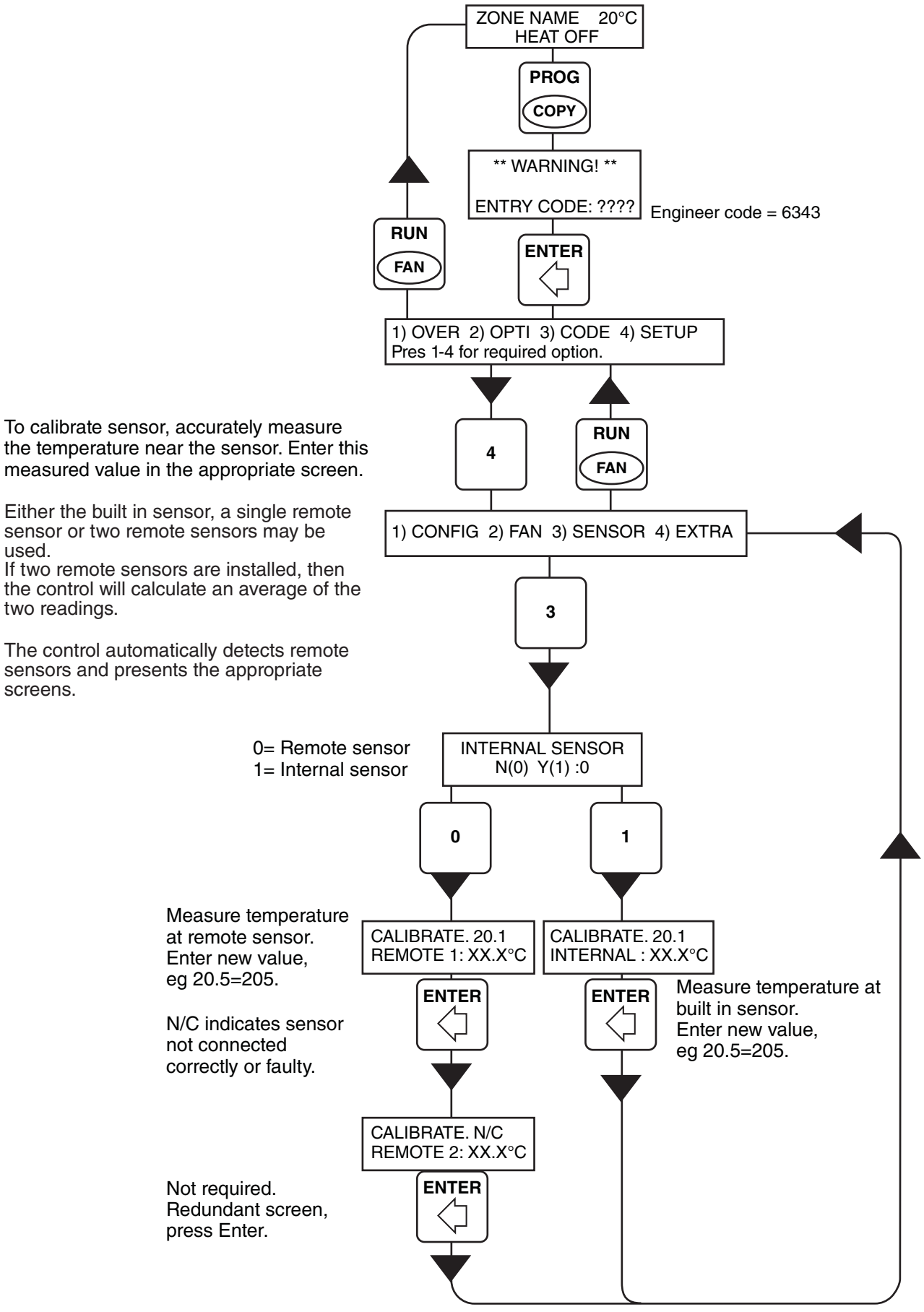
Function Type Screen path from engineer code	ON/OFF HI/LO 4 - 1	High Flame Boost 4 - 1 - (1)	Fan Purge 4-1-(0 or 2)-1	Double Ignition 4 - 1 - (0, 1 or 2)	Pressure Switch 4-1-(0, 1 or 2)	Fan Options 4 - 2
Burner Options - Warm Air Heaters						
ON/OFF	0	N/A	0	0	0	See below
High/Low Operation	1	1	N/A	0	0	See below
Modulating Operation	2	N/A	N/A	0	0	See below
Fan Options - Warm Air Heaters						
Constant Fan with Time	Burner Options - See Above					1
Automatic Summer Fan						2
Normal Fan						0 (default)
Radiant Systems						
Unitary Tube Heaters	0	N/A	0	0 or 1	0	N/A
Plaque Heaters	0	N/A	0	0 or 1	0	N/A
Linear Tube Heaters	0	N/A	0	0 or 1	0	N/A
BLACKHEAT® Multiburner Systems	0	N/A	1 Pre-Purge 00 Post-Purge 03	0	0	N/A
CORAYVAC® Single Zone Systems	0	N/A	1 Pre-Purge 00 Post-Purge 03	0	1	N/A

5.6.4 Set Fan Operation

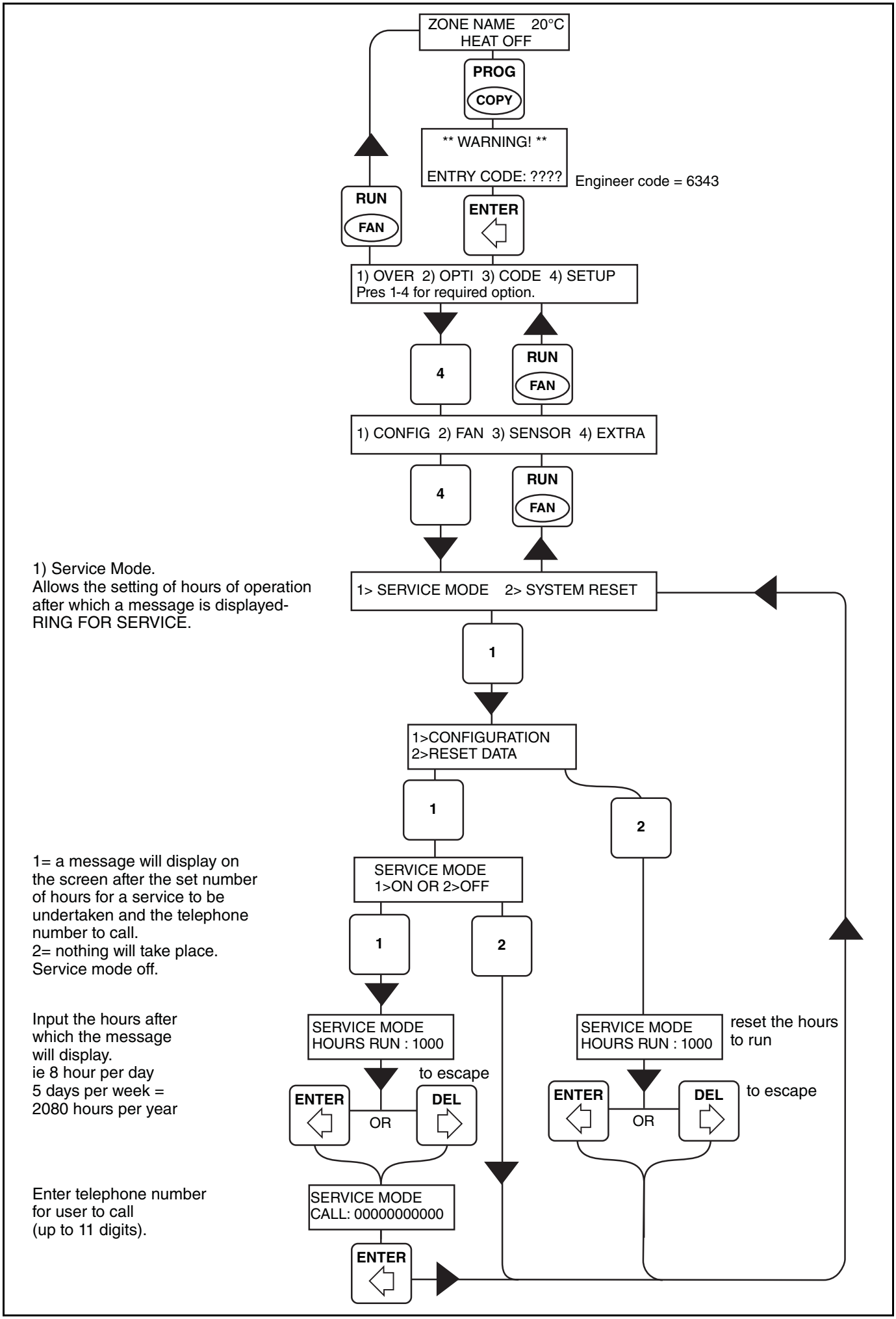
Sets how distribution fan operates for warm air heaters.


ZONE NAME 20°C
HEAT OFF
PROG
COPY
** WARNING! **
ENTRY CODE: ????
Engineer code = 6343
RUN
FAN
ENTER
1) OVER 2) OPTI 3) CODE 4) SETUP
Pres 1-4 for required option.
4
RUN
FAN
1) CONFIG 2) FAN 3) SENSOR 4) EXTRA
2
USER (0) C.FAN (1)
S.FAN (2) :0
0
1
2
0= Fan operates automatically with the heating. Also allows manual operation of fan from button.
1= Fan operates constantly during timed on period to provide constant ventilation.
2= Summer Fan. The fan turns on automatically with the burner off when the temperature exceeds the set point by temperature set. See Set Temperature Diagram.

5.6.5 Set Sensor Calibration


ZONE NAME 20°C
HEAT OFF
PROG
COPY
** WARNING! **
ENTRY CODE: ????
Engineer code = 6343
RUN
FAN
ENTER
1) OVER 2) OPTI 3) CODE 4) SETUP
Pres 1-4 for required option.
4
RUN
FAN
1) CONFIG 2) FAN 3) SENSOR 4) EXTRA
3
INTERNAL SENSOR
N(0) Y(1) :0
0= Remote sensor
1= Internal sensor
0
1
CALIBRATE. 20.1
REMOTE 1: XX.X°C
CALIBRATE. 20.1
INTERNAL : XX.X°C
ENTER
ENTER
CALIBRATE. N/C
REMOTE 2: XX.X°C
ENTER
To calibrate sensor, accurately measure the temperature near the sensor. Enter this measured value in the appropriate screen.
Either the built in sensor, a single remote sensor or two remote sensors may be used.
If two remote sensors are installed, then the control will calculate an average of the two readings.
The control automatically detects remote sensors and presents the appropriate screens.
Measure temperature at remote sensor. Enter new value, eg 20.5=205.
N/C indicates sensor not connected correctly or faulty.
Not required. Redundant screen, press Enter.
Measure temperature at built in sensor. Enter new value, eg 20.5=205.

5.6.6 Set Service Mode



1) Service Mode.
Allows the setting of hours of operation after which a message is displayed- RING FOR SERVICE.

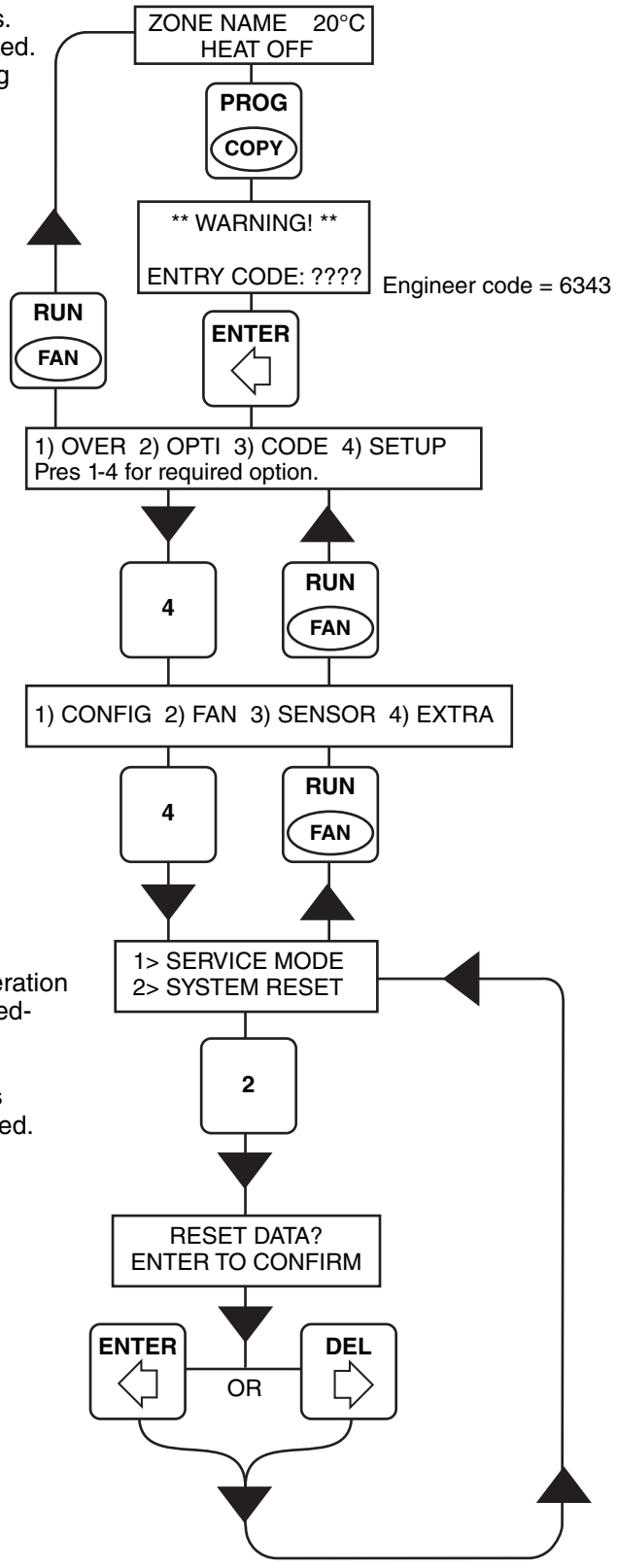
1= a message will display on the screen after the set number of hours for a service to be undertaken and the telephone number to call.
2= nothing will take place. Service mode off.

Input the hours after which the message will display.
ie 8 hour per day
5 days per week =
2080 hours per year

Enter telephone number for user to call (up to 11 digits).

5.6.7 System Reset

Resets all data to default settings.
All features will need to be checked.
All programmed times and setting will need re-entry.



1) Service Mode.
Allows the setting of hours of operation after which a message is displayed- RING FOR SERVICE.
2) System Reset.
Resets all data to default settings
All features will need to be checked.

SECTION 6: STANDARD SCREEN MESSAGES

6.1 Stand Alone Control Screen Messages

ZONE NAME 20°C HEAT OFF	= Heating off due to time or temperature being satisfied.
ZONE NAME 20°C HEAT ON	= Heating on and operating, may be modulating for modulating burner.
ZONE NAME 20°C STATUS PRE HEAT	= Heating on during pre-heat time, before programmed start time controlled by optimum start.
ZONE NAME 20°C SWITCH OPEN	= On CORAYVAC® systems, pressure switch in open position.
ZONE NAME 20°C SWITCH CLOSED	= On CORAYVAC® systems, pressure switch in closed position.
ZONE NAME 20°C HI FLAME BOOST	= Heating on full at turn on, for two stage burners.
ZONE NAME 20°C LOW:ON HIGH:OFF	= Heating on low flame, for two stage burners.
ZONE NAME 20°C LOW:ON HIGH:ON	= Heating on high flame, for two stage burners.
ZONE NAME 20°C LOW:OFF HIGH:OFF	= Heating off, for two stage or modulating burners.
ZONE NAME 20°C STATUS: FAN ON	= For warm air, fan set manually to run continuously with burner off. See Manual Fan Operation Section.
ZONE NAME 20°C STATUS: SUMMER	= Control in summer mode. Manually set to turn heating off. See Over Ride Summer Mode Section.
ZONE NAME 20°C STATUS: OVERRIDE	= Control in override mode. The manual override has been set and screen will also show a count down of remaining time for override. See Information Section.
ZONE NAME 20°C STATUS: HOLIDAY	= Control has been programmed for a holiday period and is maintaining frost protection only. See Section 5.5.5 to cancel.
TARGET TEMP:19°C TIME CLOCK: DAY	= Information screen showing current temperature set point and time switch status. Press INFO: 2 to return to standard screen.
10:20:55 Fri 06-05-05	= Information screen showing current time and date. Press INFO: 2 to return to standard screen.
ZONE NAME 20°C SERVICE CALL 019???	= Indicates as a flash screen alternating with the normal status screen. The heater/s require a service due to completion, the pre-set hours run. This is not a fault condition, the equipment will continue to operate. See Set Service Mode Section.

6.2 Network Control Screen Message

ZONE NAME 20°C UNDER NW CONTROL	= This control currently being accessed by another network control.
NETWORK ERROR 01	= This control cannot connect to the network. Check network wiring and configuration. See Network Wiring Section.
KEYPAD LOCKED	= Network control that has been locked during network configuration. See Network Configuration Section. No access is allowed at this control. Use master control to carry out adjustments.

Page 36, Section 6.1 screen messages also apply to network controls.

6.3 Fault Messages

ZONE NAME N/C HEAT OFF	= Fault with remote temperature sensor or sensor wiring.
ZONE NAME 20°C STATUS: LOCKOUT	= Warm air heater - burner in lockout. Radiant systems - one of the connected burners on lockout. (NOTE: There is a 3 minute delay between lockout occurring and display on control). **See Warning Below.**
ZONE NAME 20°C STATUS: RESET 45	= Lockout reset operating on countdown from 45 seconds.
SWITCH = OPEN	= System configured for pressure switch when heating system is not a CORAYVAC®.
SWITCH = OPEN	= System is a CORAYVAC® but pressure switch is not making during call for heat.
CLOCK FAULT	= NO function on control. Eliminate by switching off power to control, removing battery for minimum 1 minute before refitting battery & restoring power.

⚠ WARNING

Explosion Hazard

If control locks out, do not make more than three attempts to restart the heater.

Dangerous gas mixtures can build up.

The fault must be traced and repaired by a registered installer or service engineer.

Failure to follow these instructions can result in death, injury or property damage.